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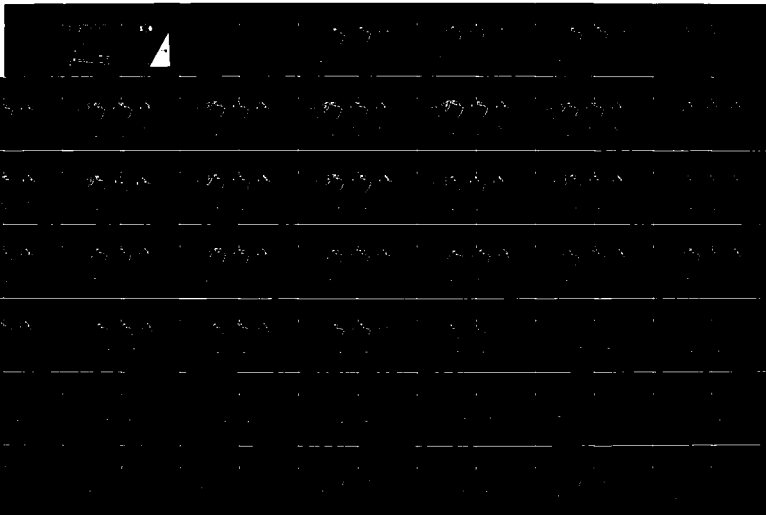
EASTERN - WESTERN ARCTIC SEA ICE ANALYSIS 1985(U) NAVAL
POLAR OCEANOGRAPHY CENTER WASHINGTON DC 1985

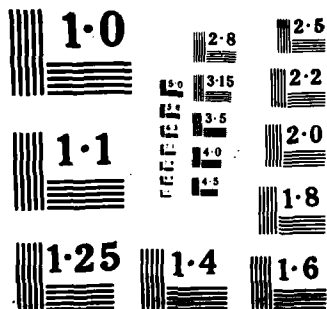
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EASTERN—WESTERN ARCTIC SEA ICE ANALYSIS 1985

PREPARED BY
NAVAL POLAR OCEANOGRAPHY CENTER,
SUITLAND, MD

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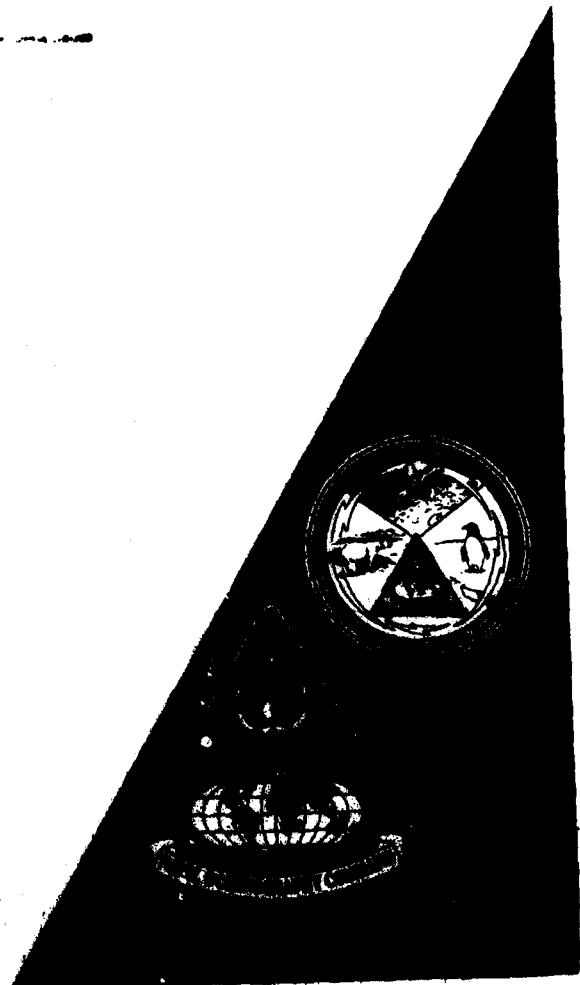
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FOREWORD

The U.S. Navy has a long and colorful history of polar exploration and currently is an active participant in the growing national activity in the Arctic and Antarctic. The strategic importance and increased demand for the natural resources of these areas have resulted in a greater requirement for environmental information. In 1976, the National Oceanic and Atmospheric Administration (NOAA) joined the Navy in forming a Joint Ice Center (JIC) to combine efforts and resources in sea ice analysis and forecasting.

Through 1972, reliable sea ice information in the polar regions was based on relatively few shore station and ship reports augmented by limited aerial reconnaissance data. These data were further restricted mainly to the relatively small areas observed primarily during the ship operating seasons. The advent of high resolution satellite imagery combined with the ground truth of conventional observations has in recent years enabled a description of the polar ice fields on a semi-synoptic scale in both polar regions.

This publication is the twelfth in a continuing yearly series of Arctic sea ice atlases prepared in the Joint Ice Center at the Naval Polar Oceanography Center, Suitland. The atlas contains weekly charts depicting Northern Hemisphere and Great Lakes ice conditions and extents. The information presented was prepared under operational time constraints principally from satellite imagery supplemented by conventional observations. The Great Lakes ice analyses are derived from satellite imagery and information provided by the National Weather Service Forecast Office, Ann Arbor, Michigan. Table 1 located on the inside back cover summarized satellite data availability for 1985.

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FOREWORD

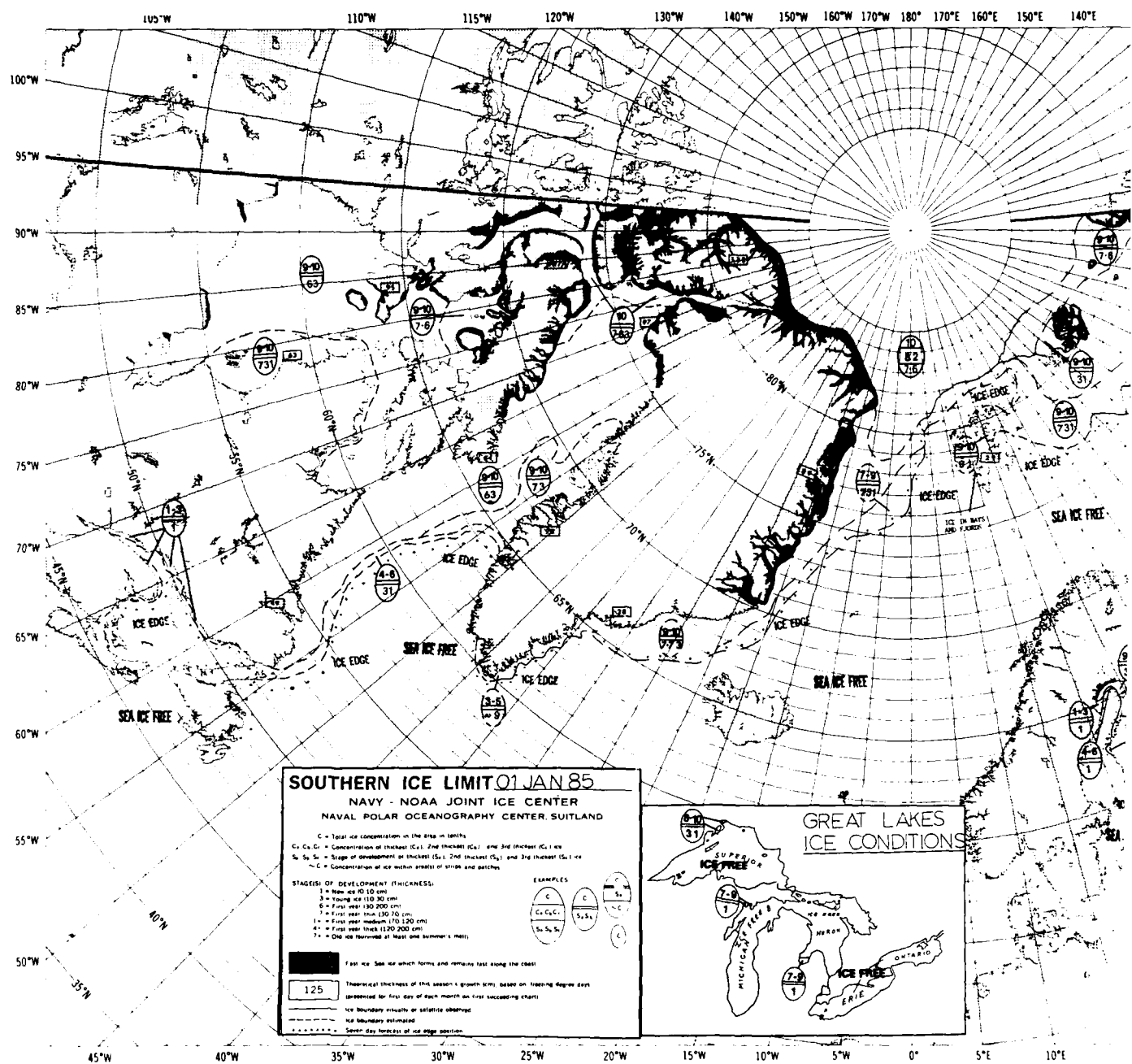
The purpose of this atlas is to provide operators and researchers with panoramic weekly hemispheric sea ice analyses. Satellite data limitations and other difficulties involved in manually synthesizing various forms of ice data have evolved the following analysis procedures:

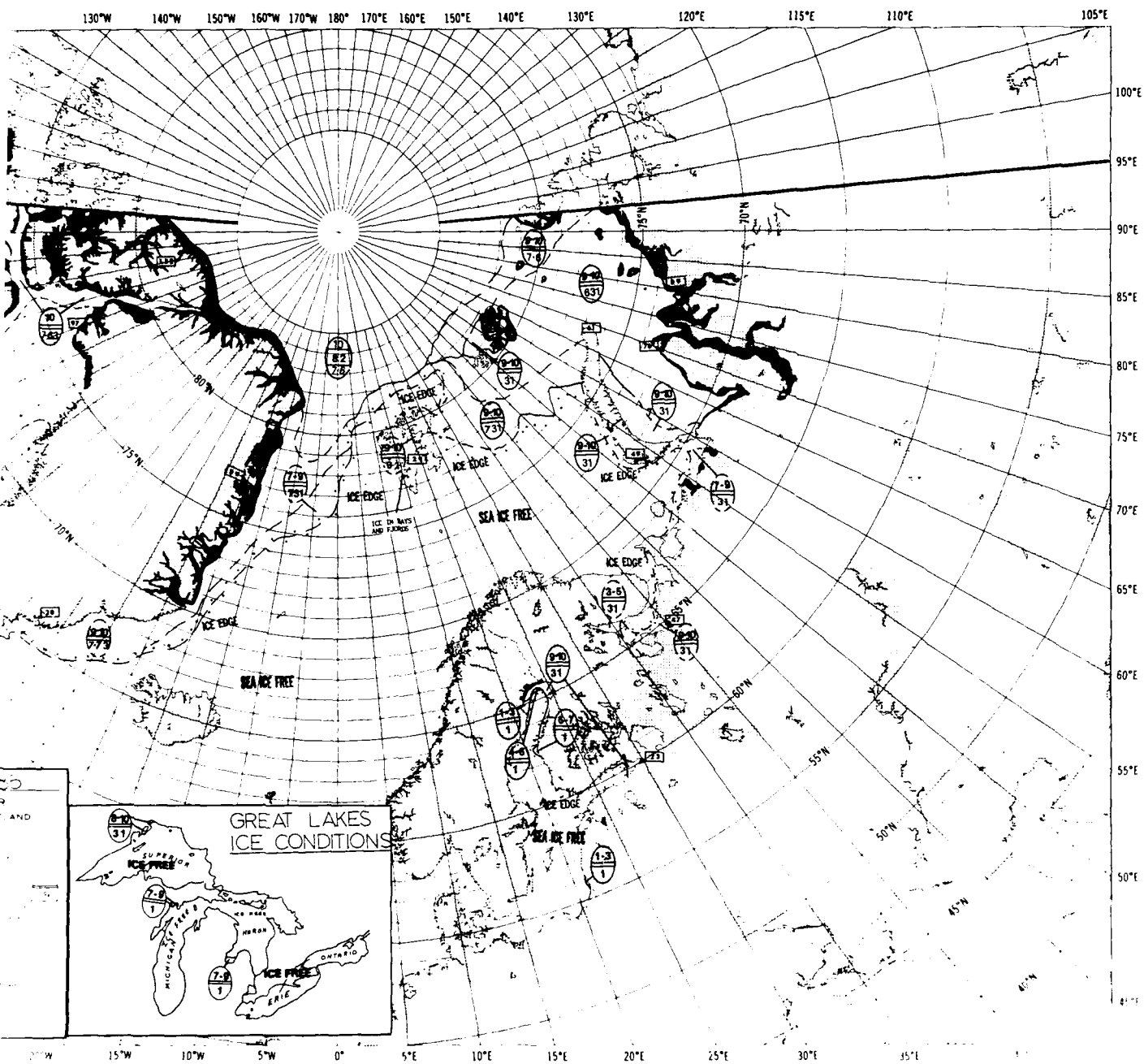
a. Conventional shore station, ship and aerial ice reconnaissance observations are plotted on base charts and evaluated for timeliness.

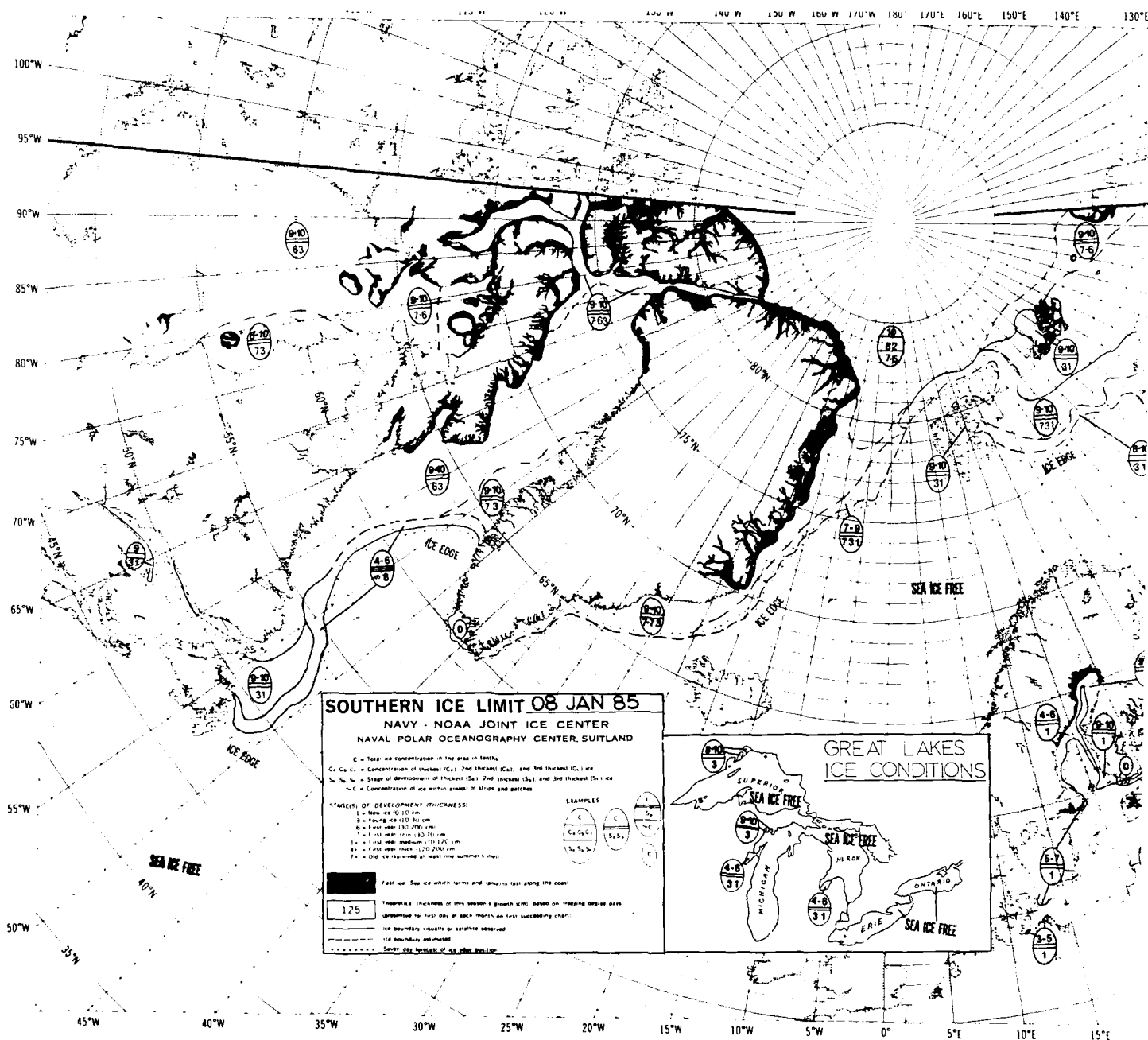
b. Satellite data is analyzed for ice information content, with the most recent and highest resolution considered first. Synthesis of conventional with satellite data yields the final analysis.

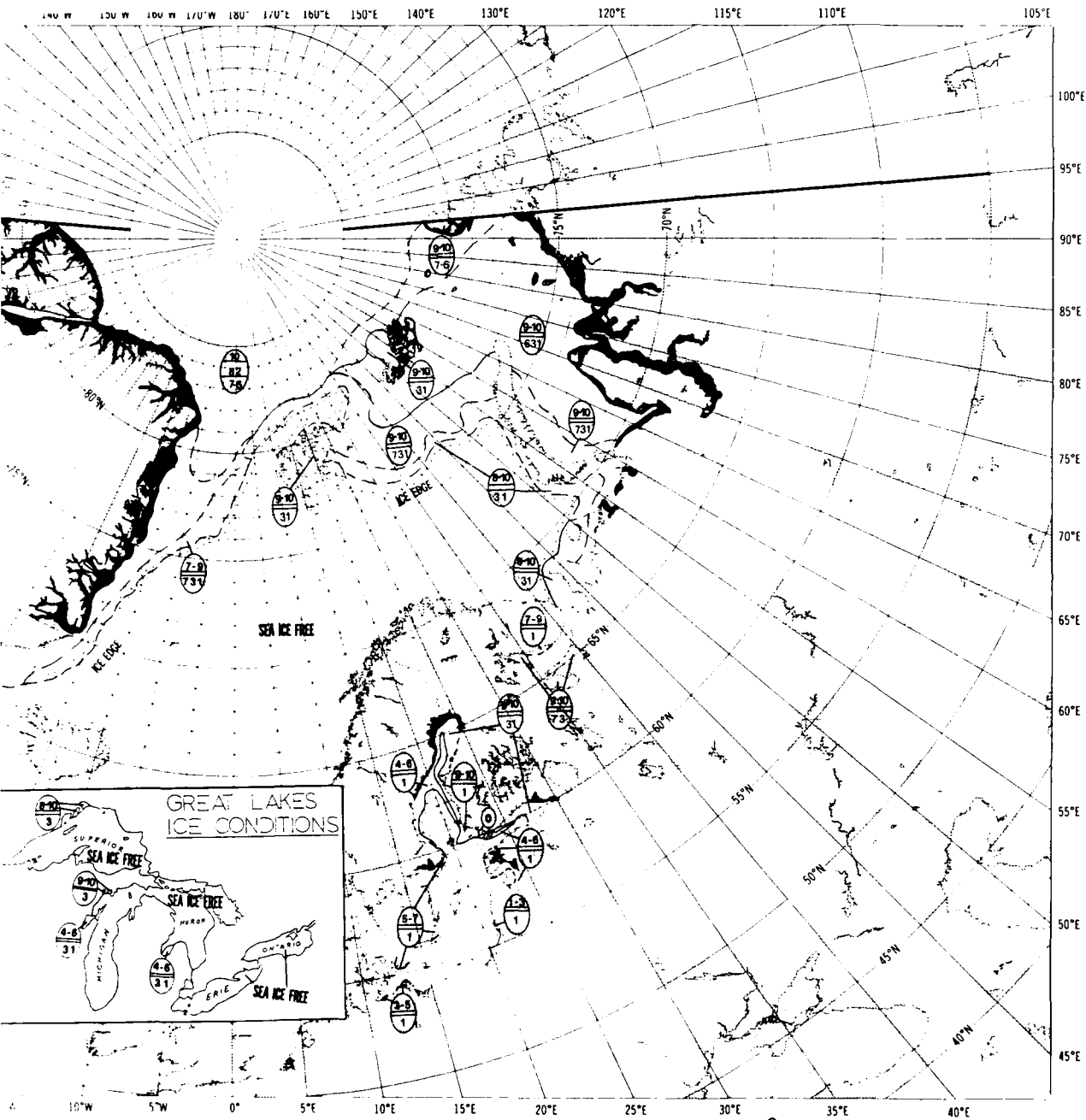
c. Where sufficient data are not available to define the sea ice limit, an estimated boundary is depicted. After one week of no data availability the ice edge position is based on analyzed theoretical ice drift data and other diagnostic aids. During subsequent weeks of no data availability the ice edges approach seasonal mean positions.

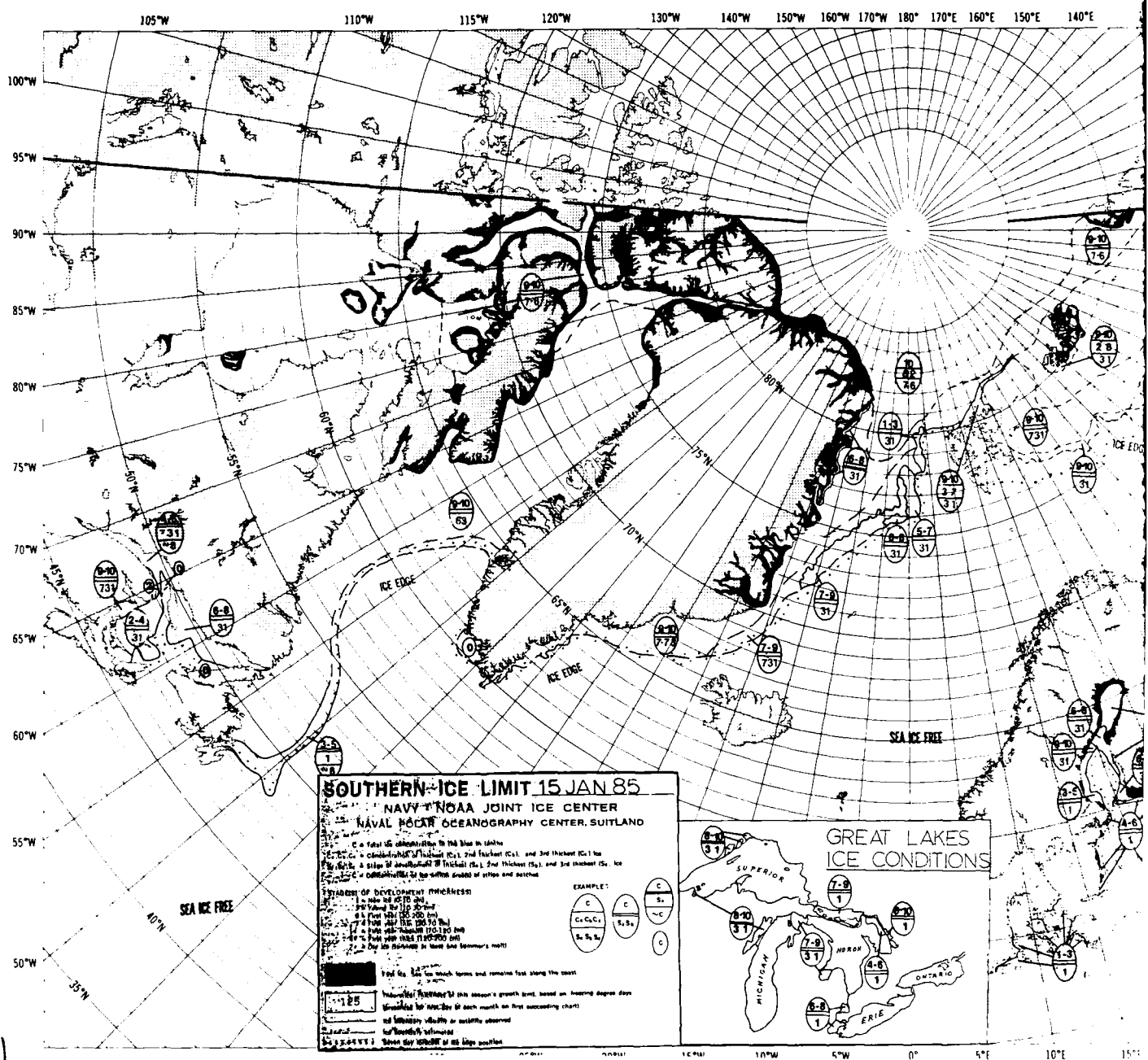
Joint Ice Center
Naval Polar Oceanography Center
4301 Suitland Road
Washington, DC 20390-5180

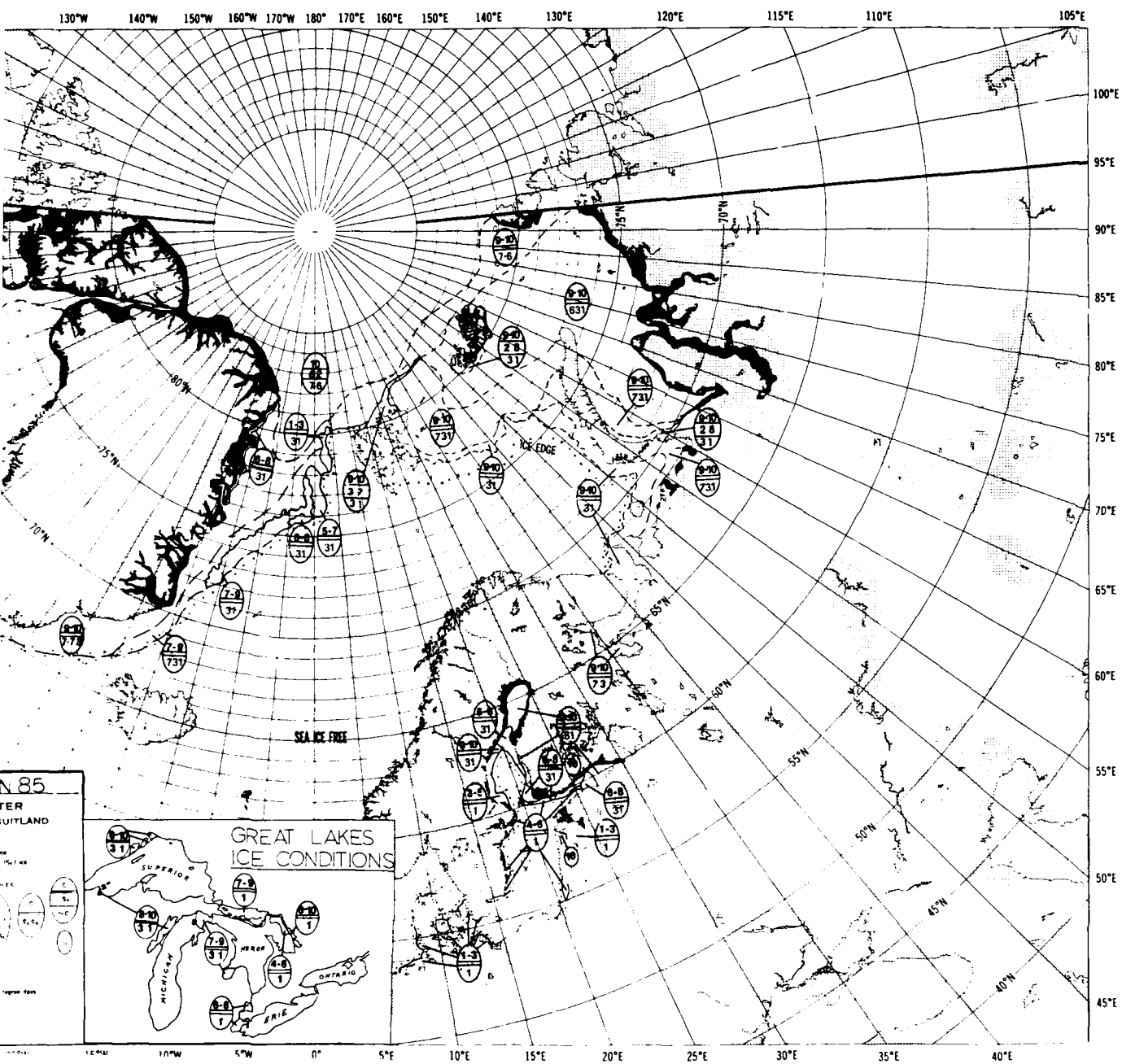




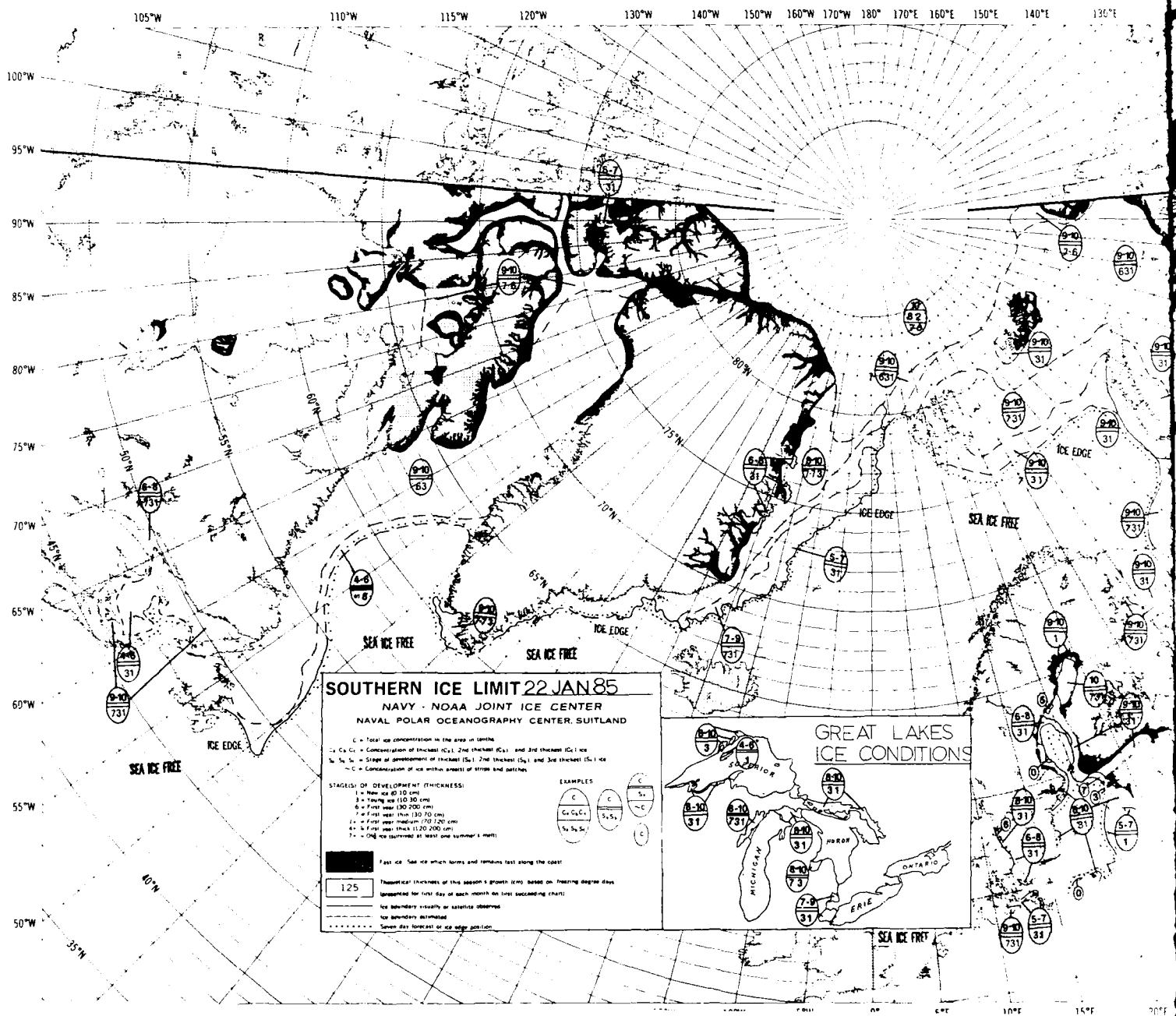


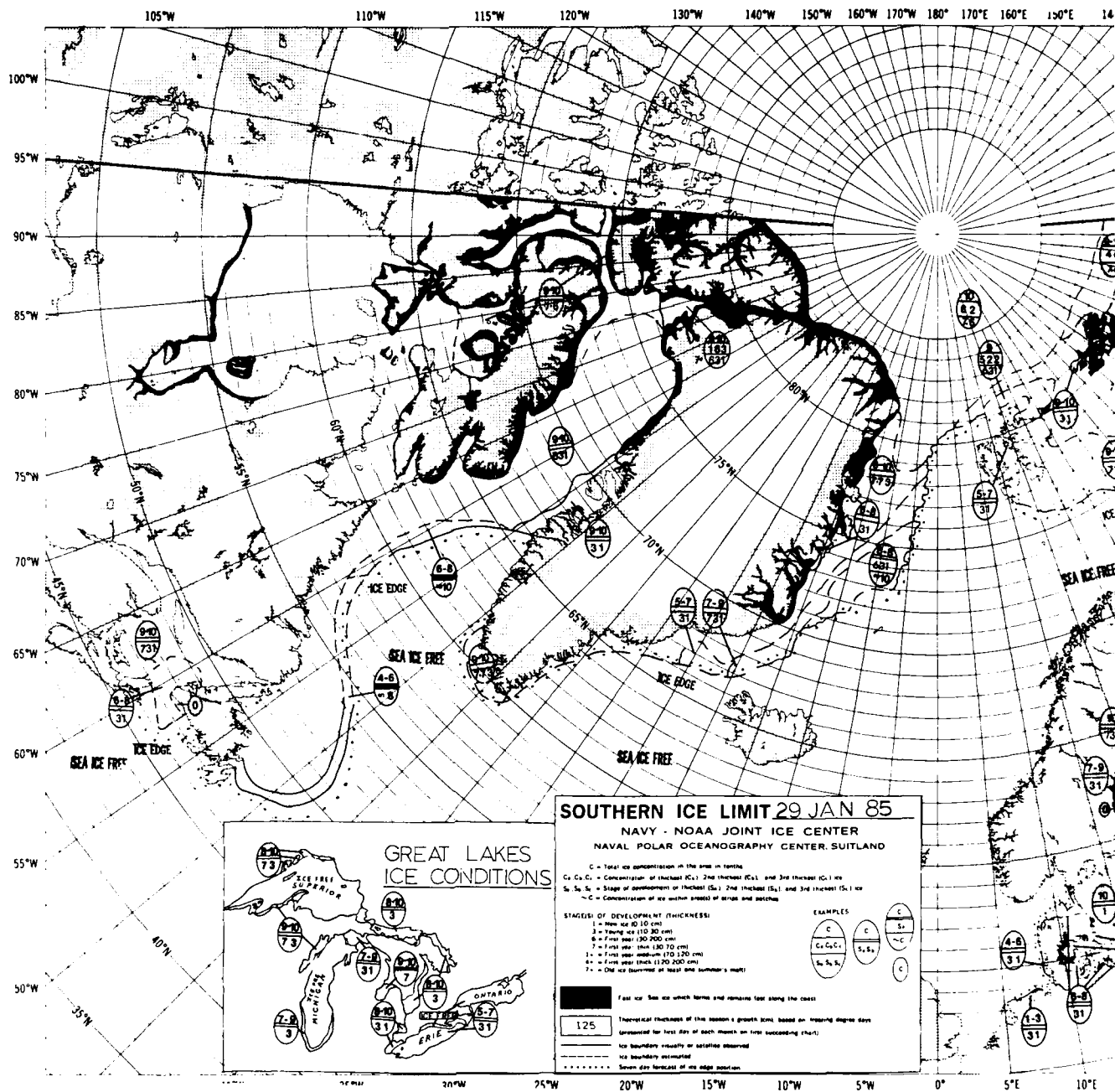


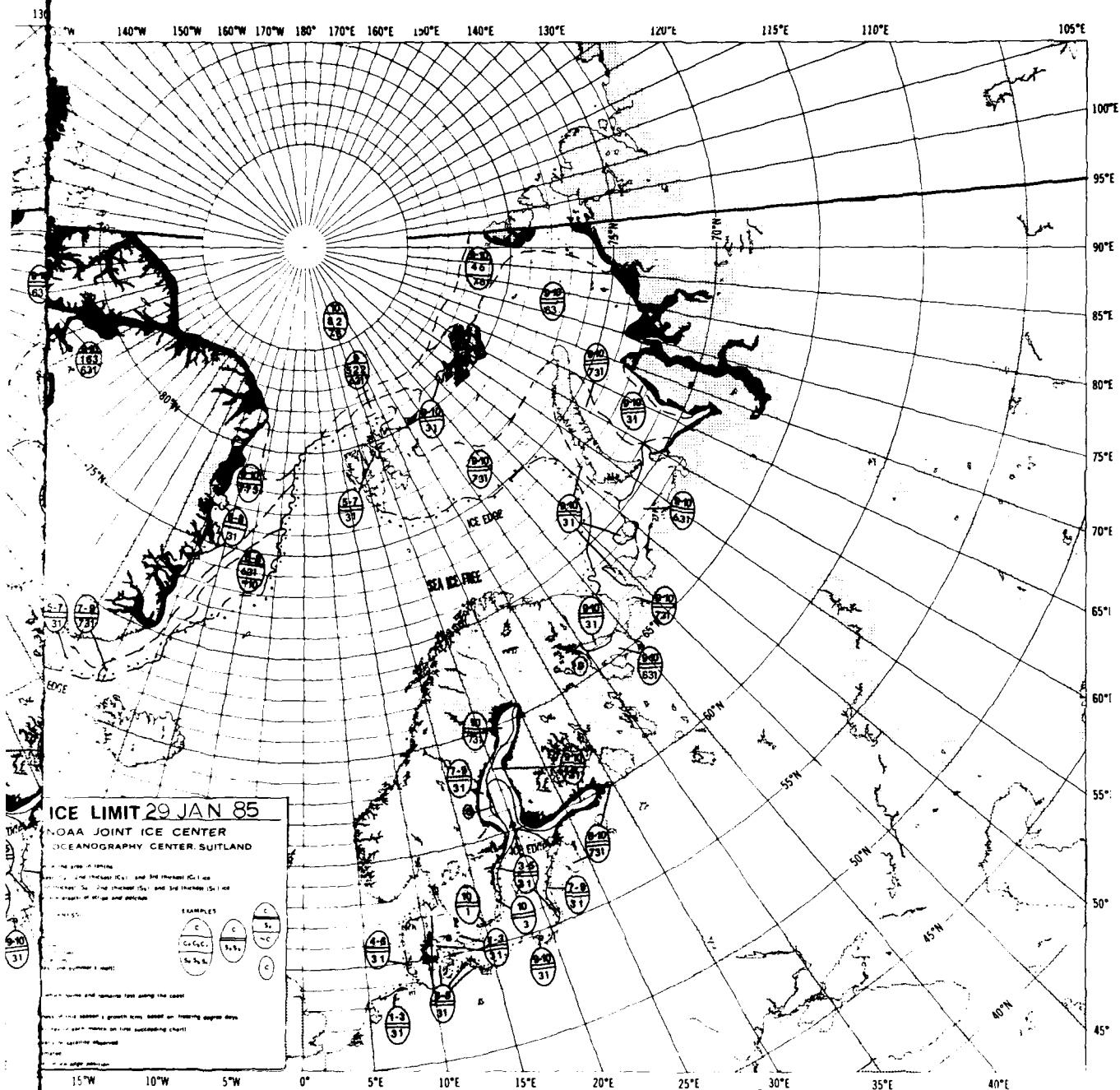


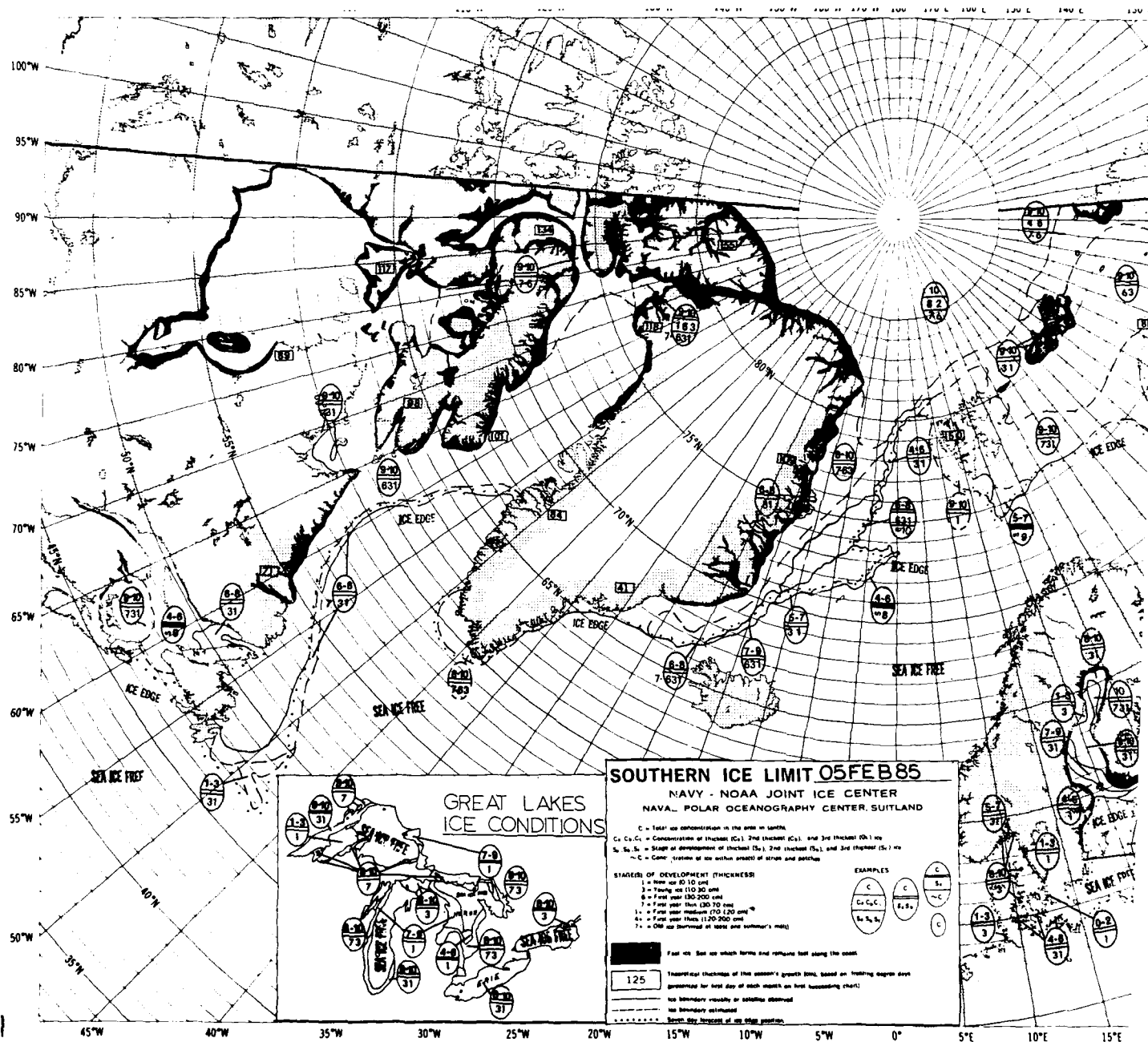


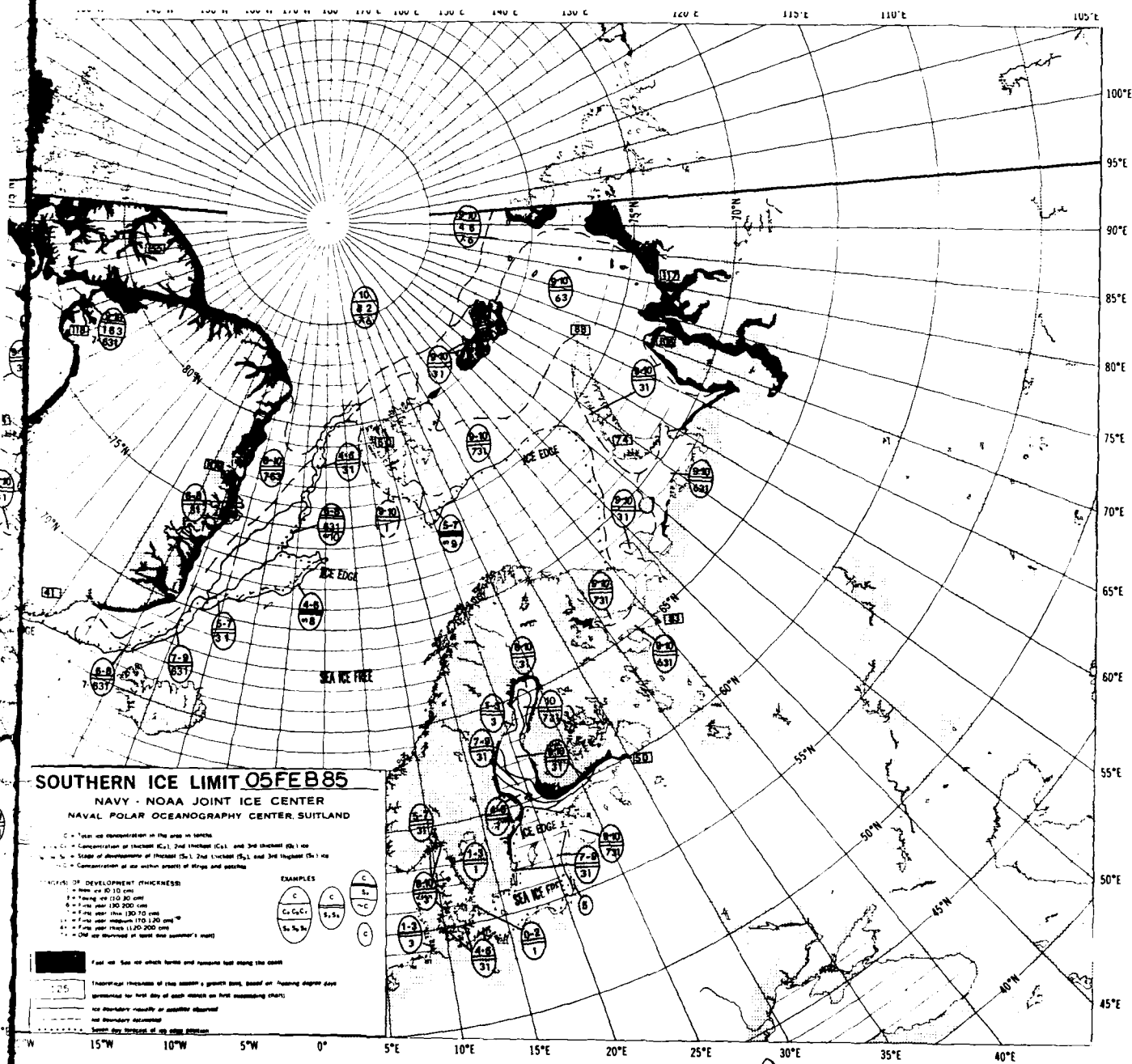
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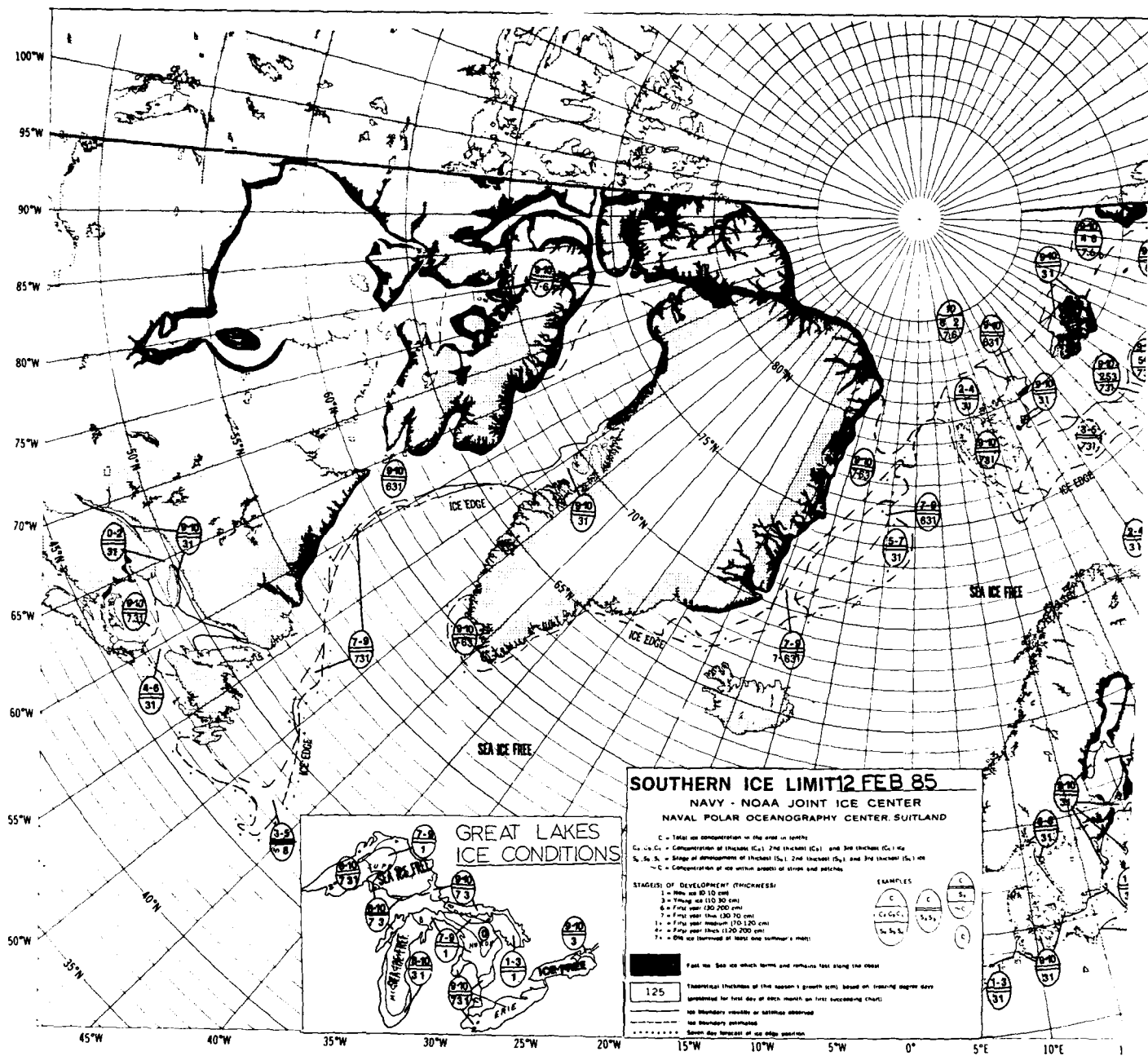


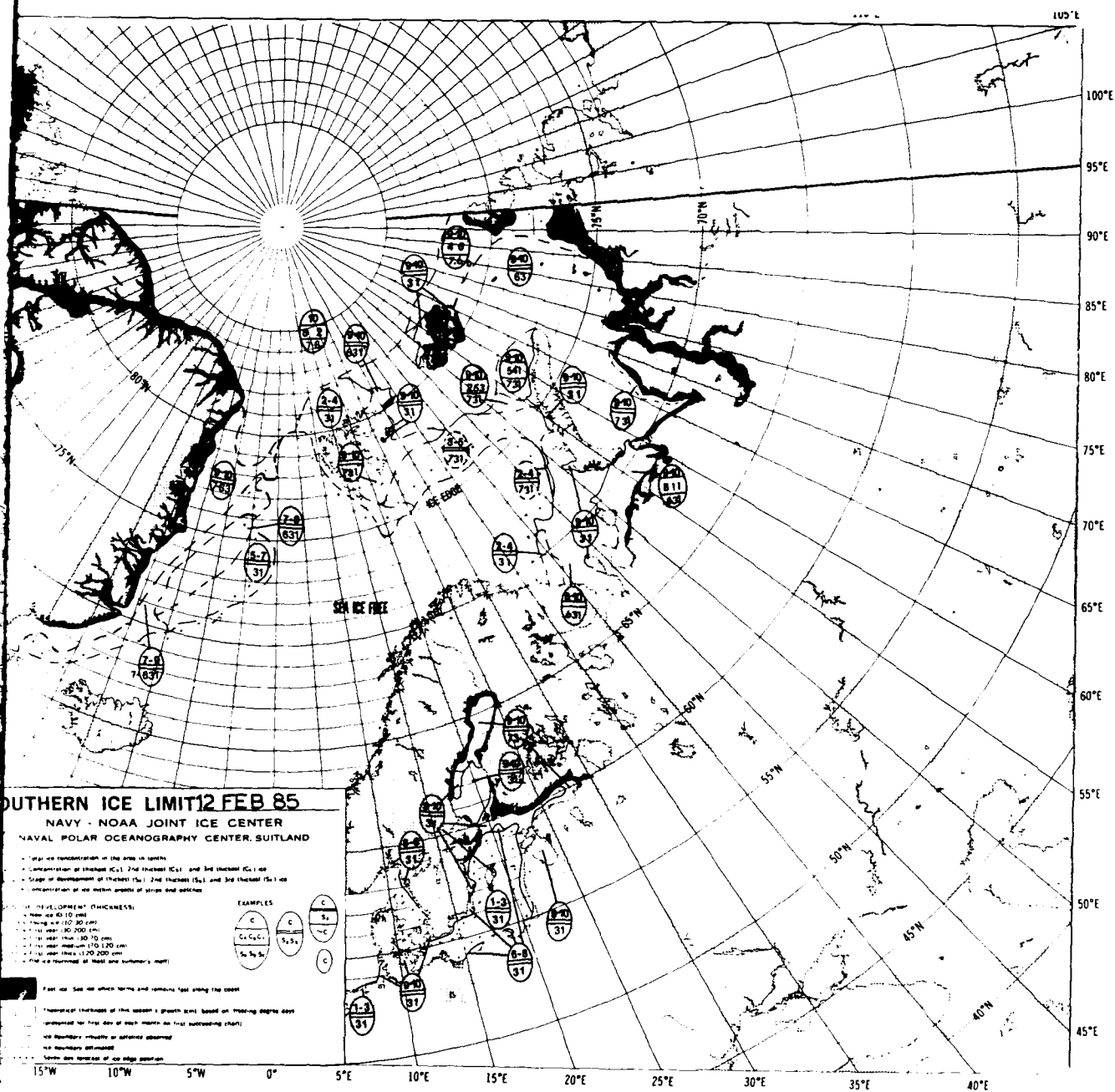


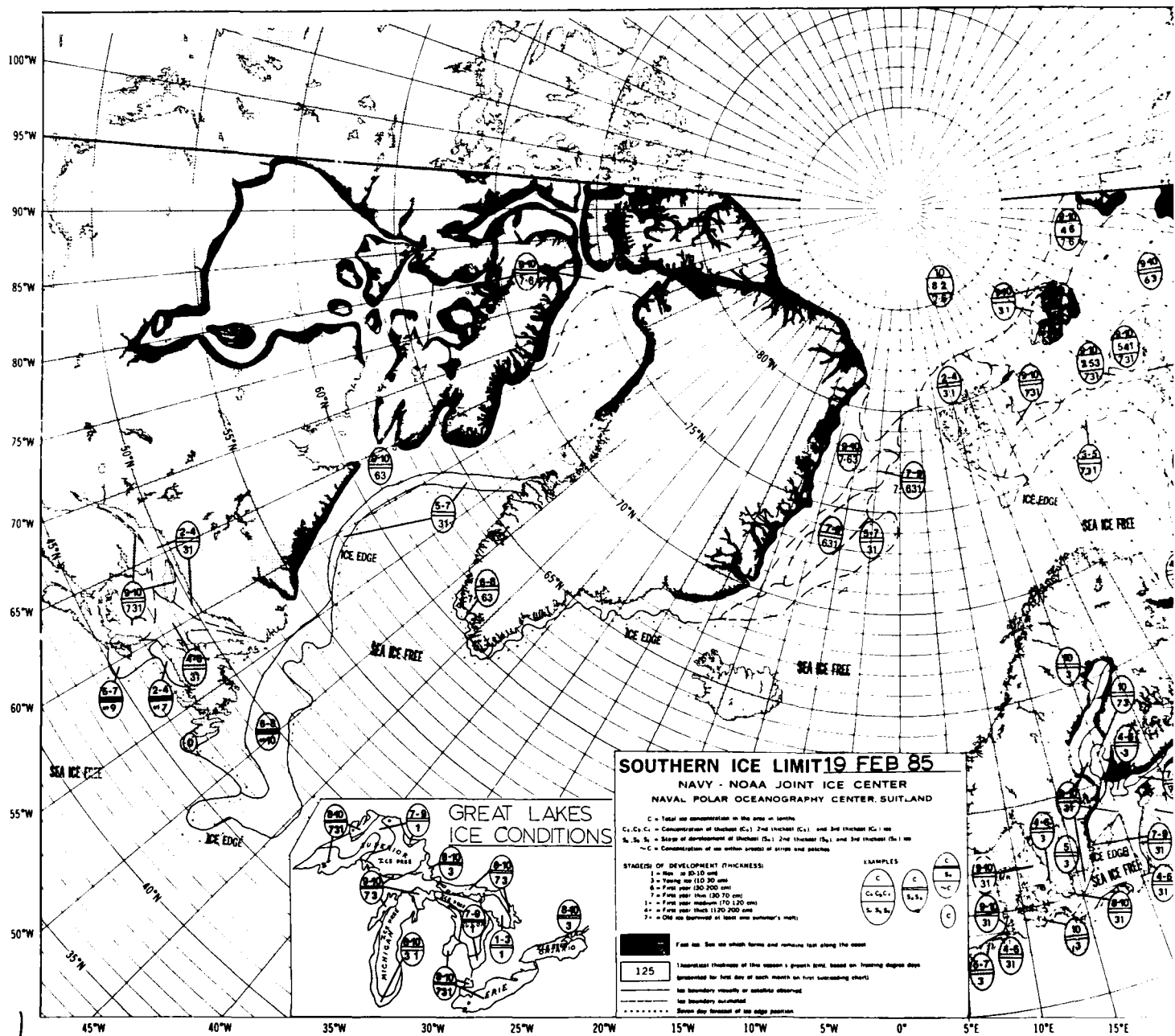


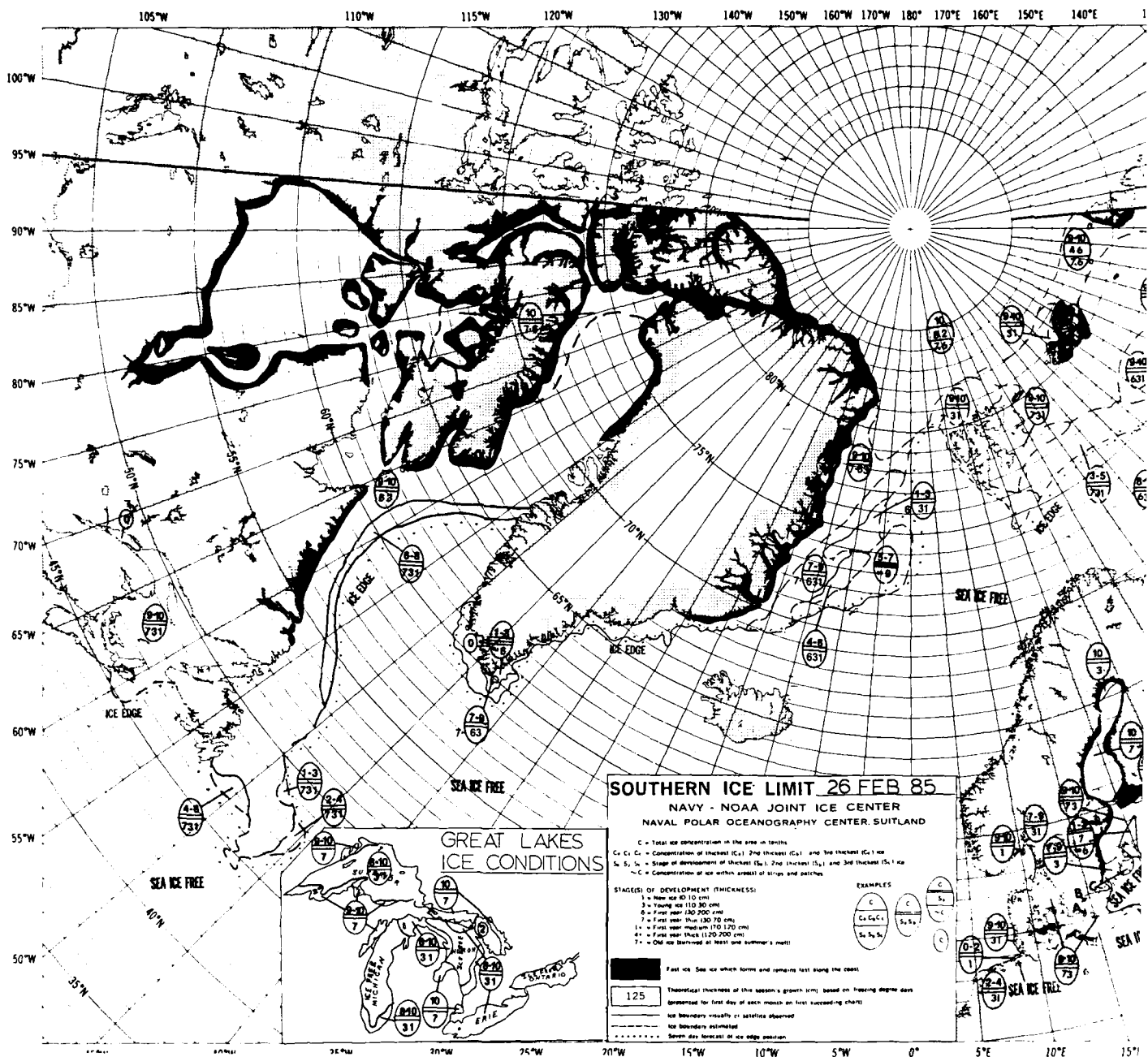


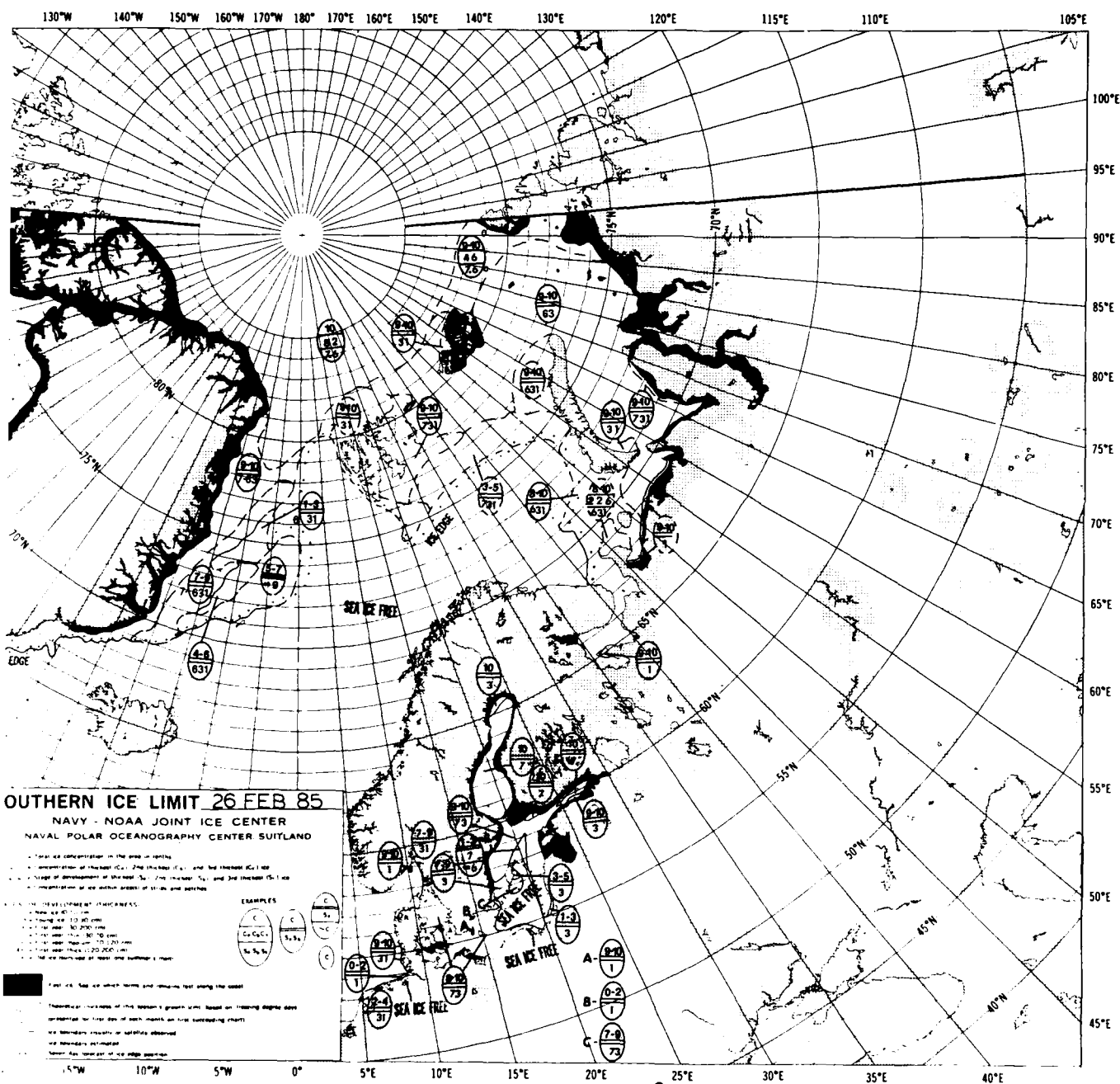


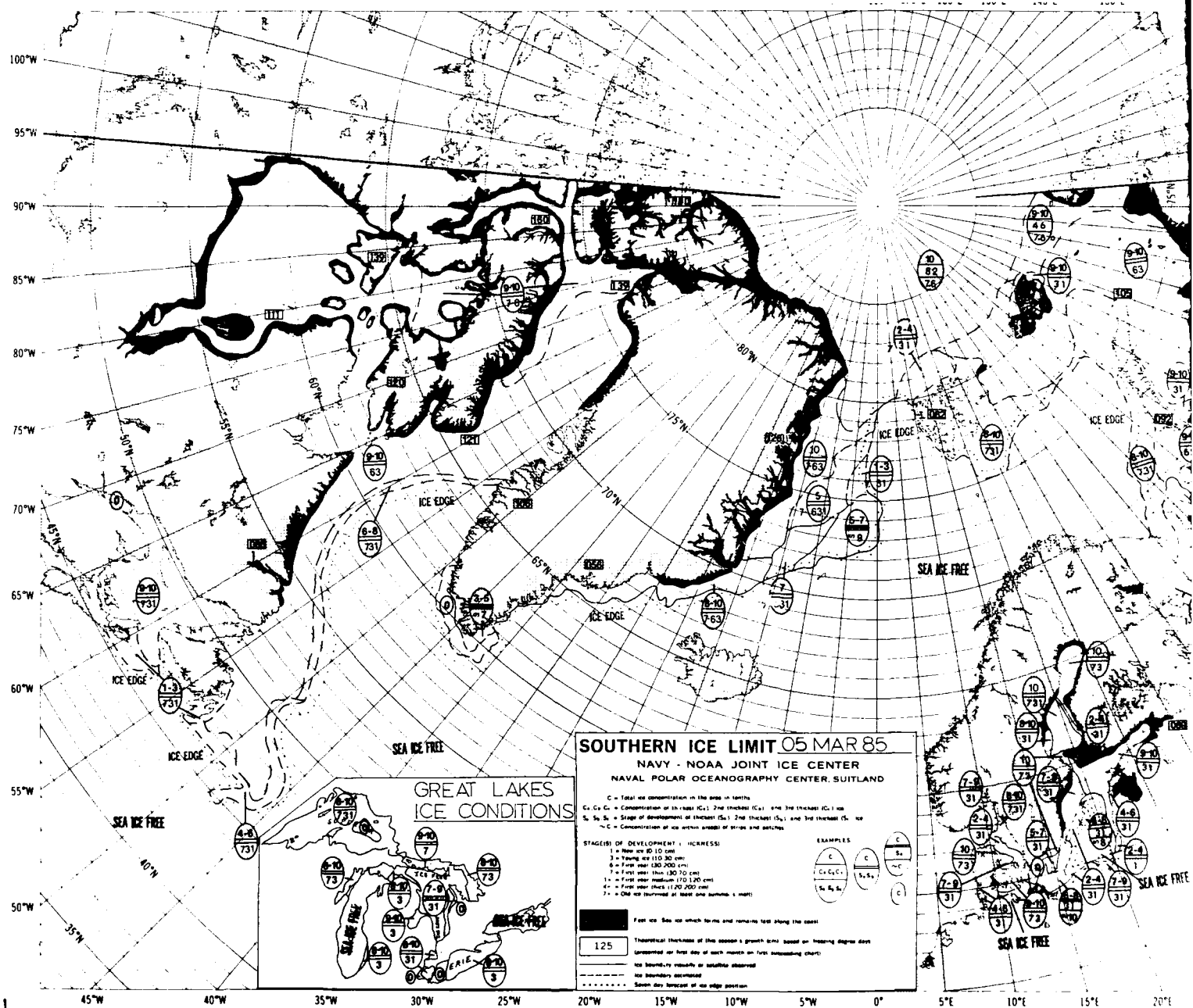


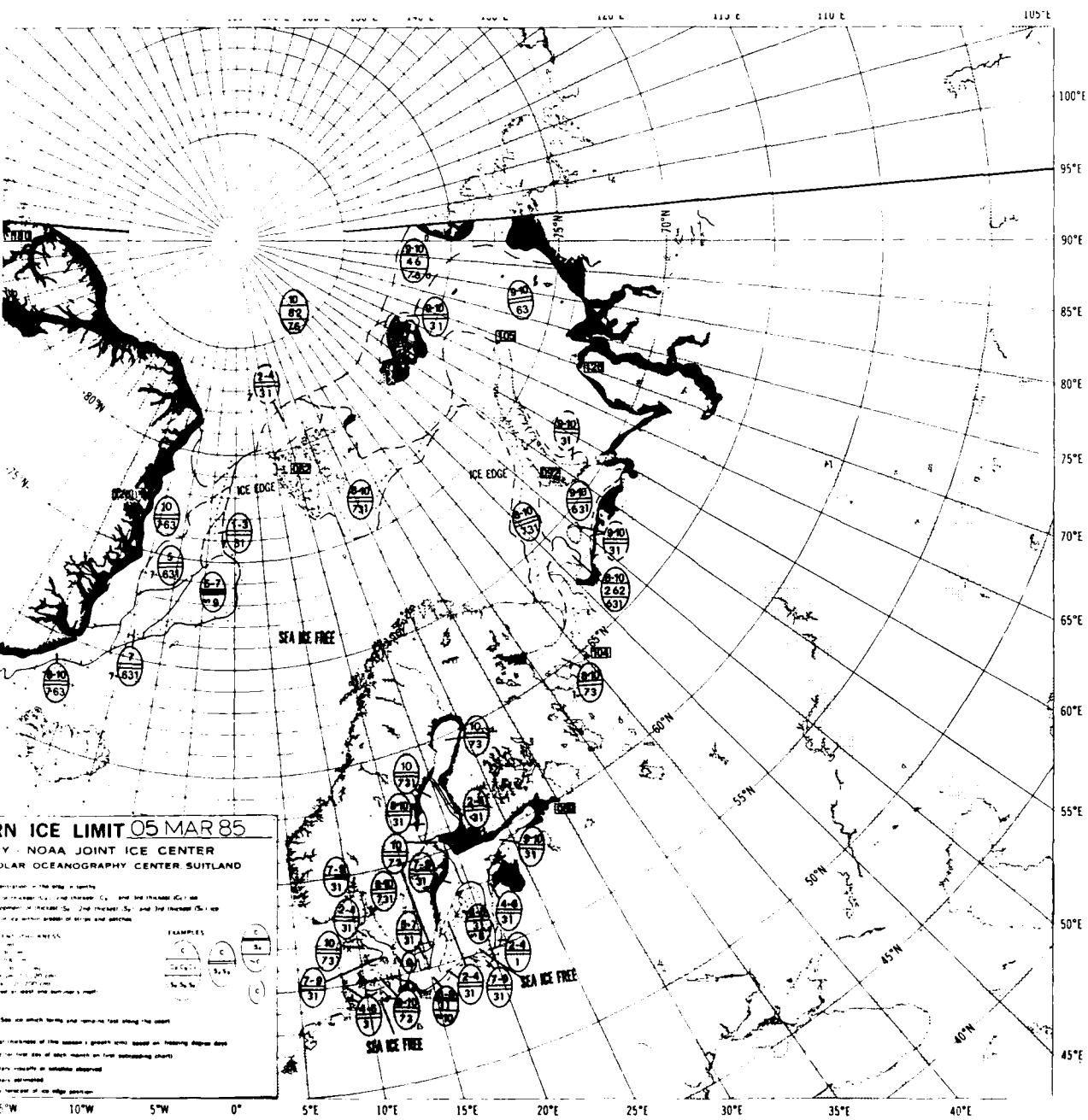


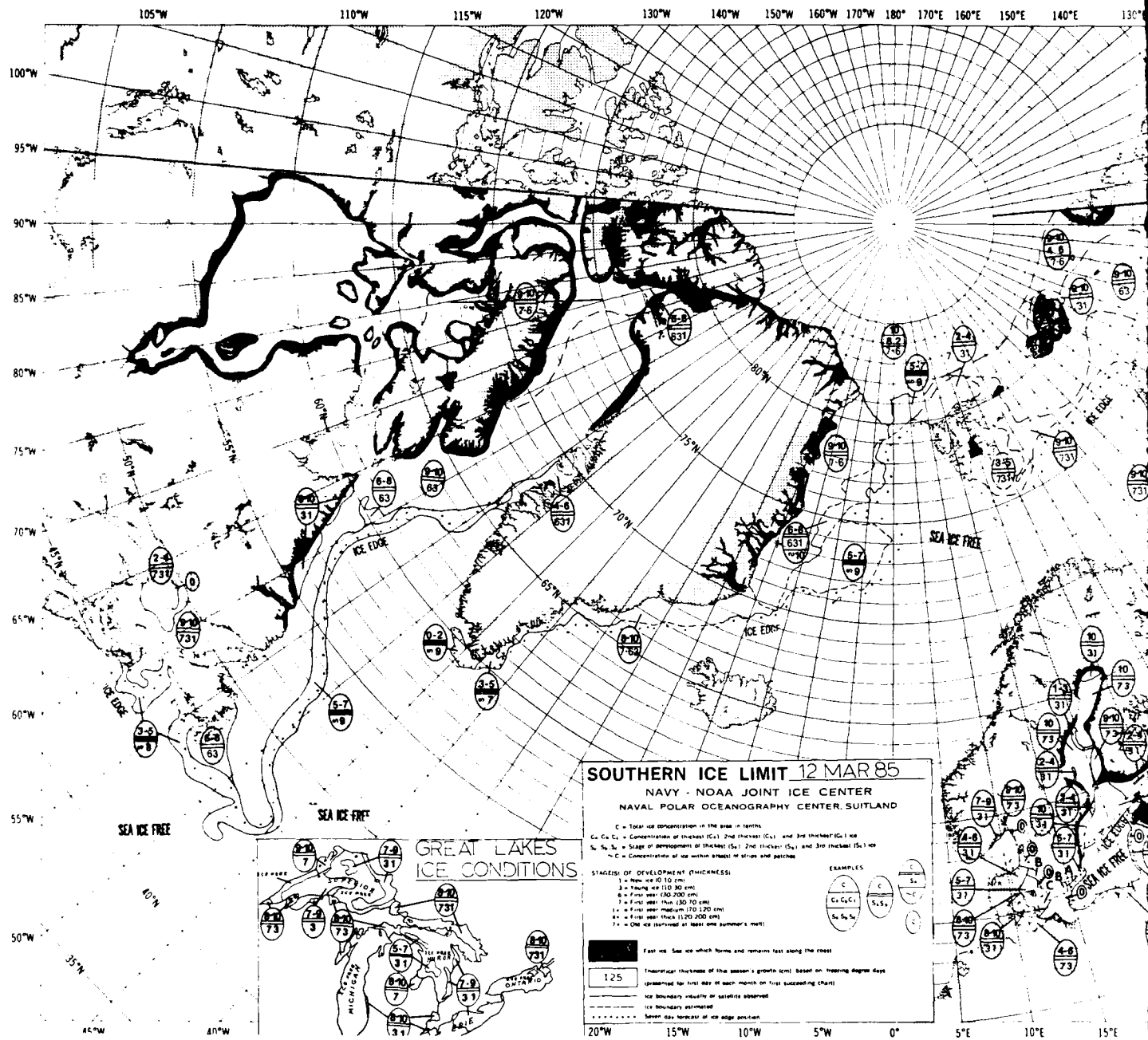


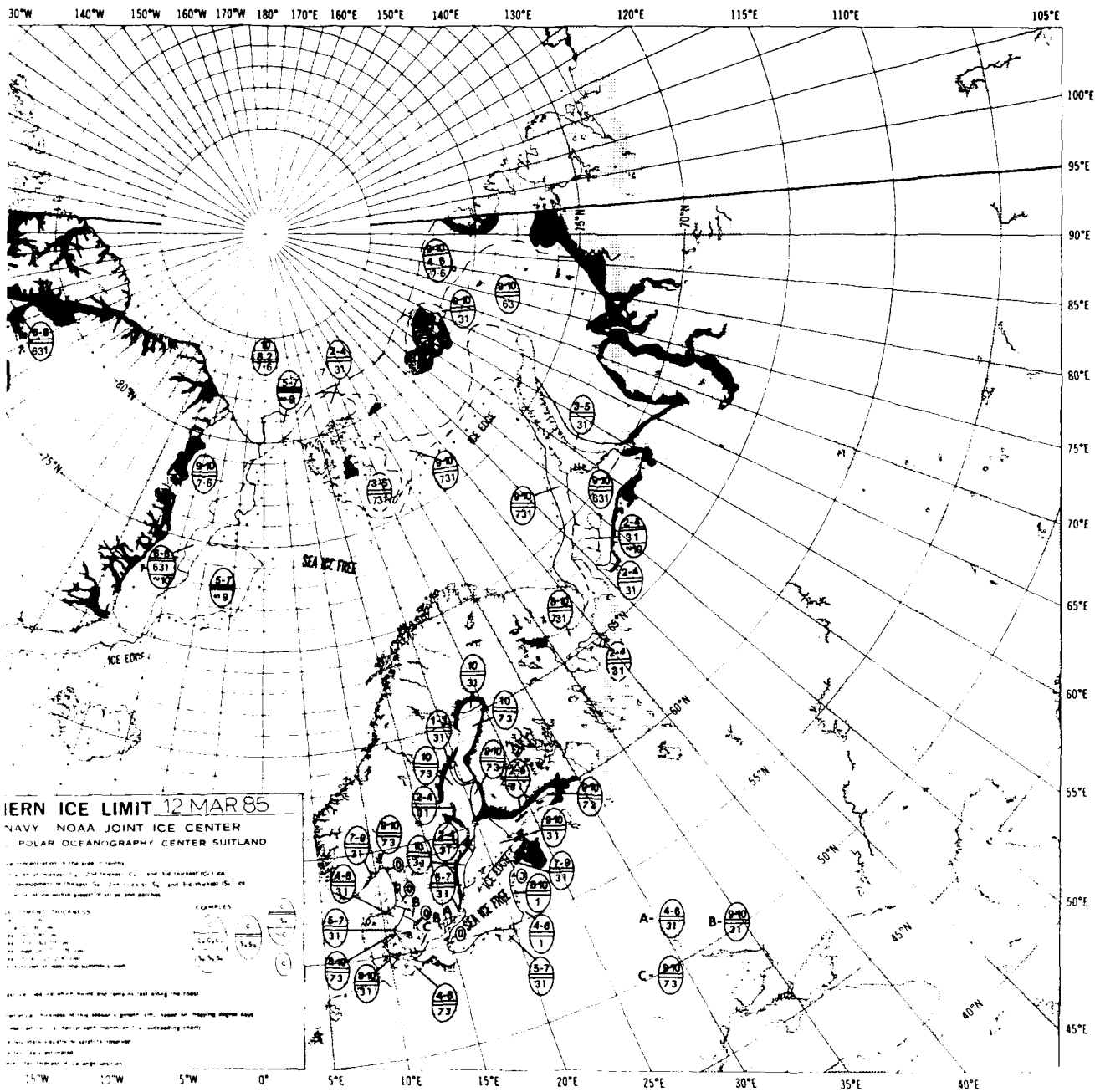


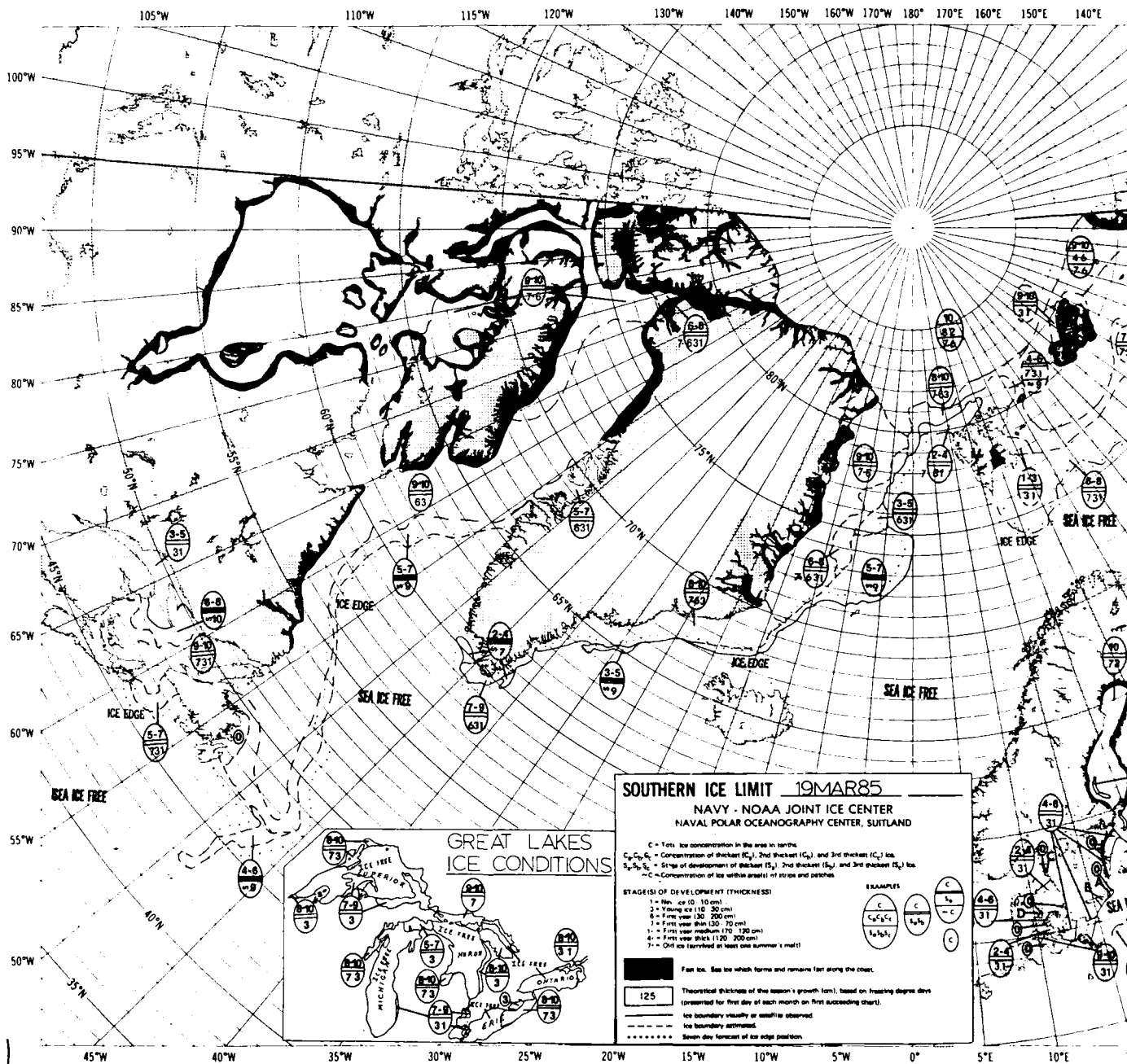


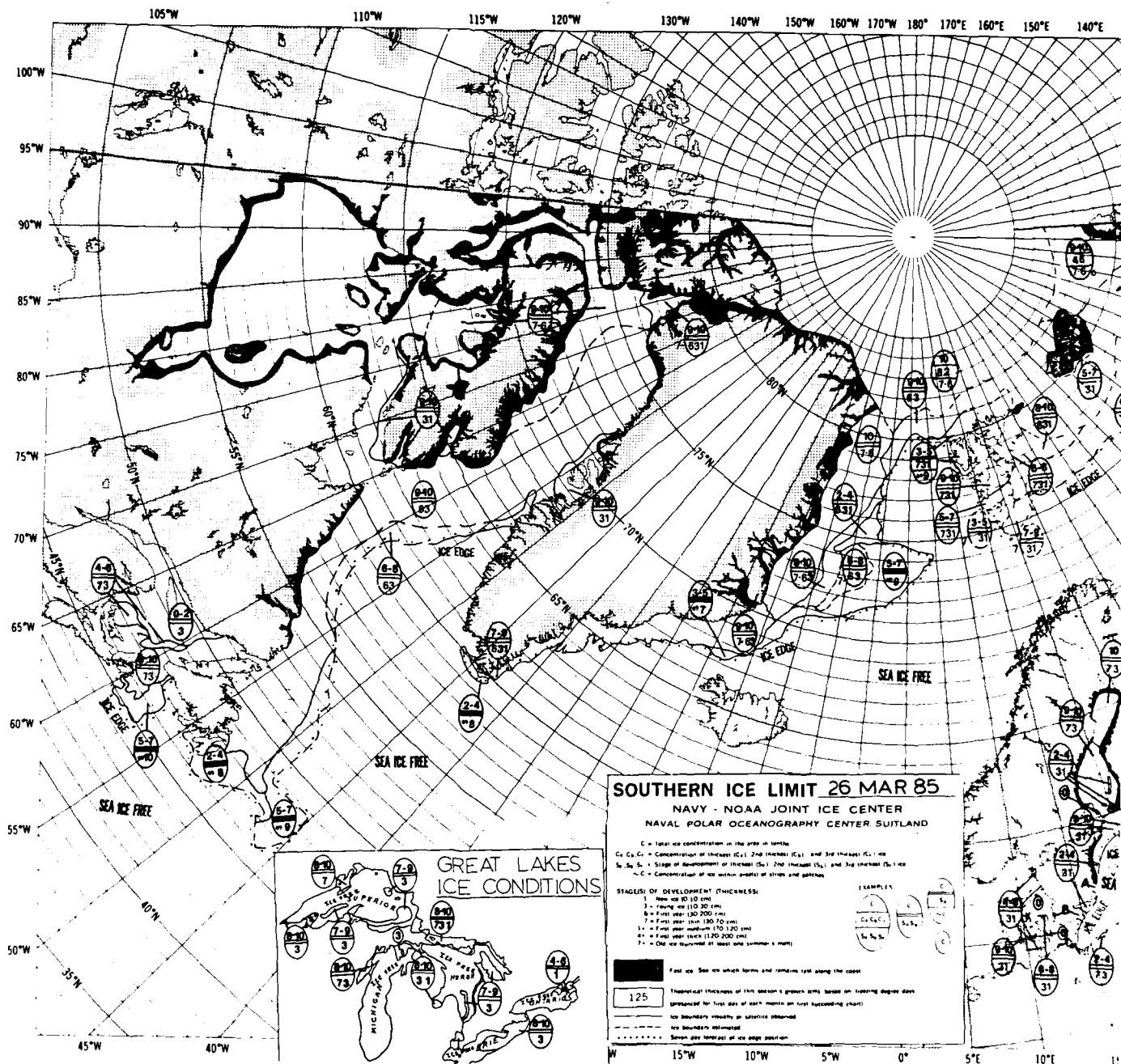


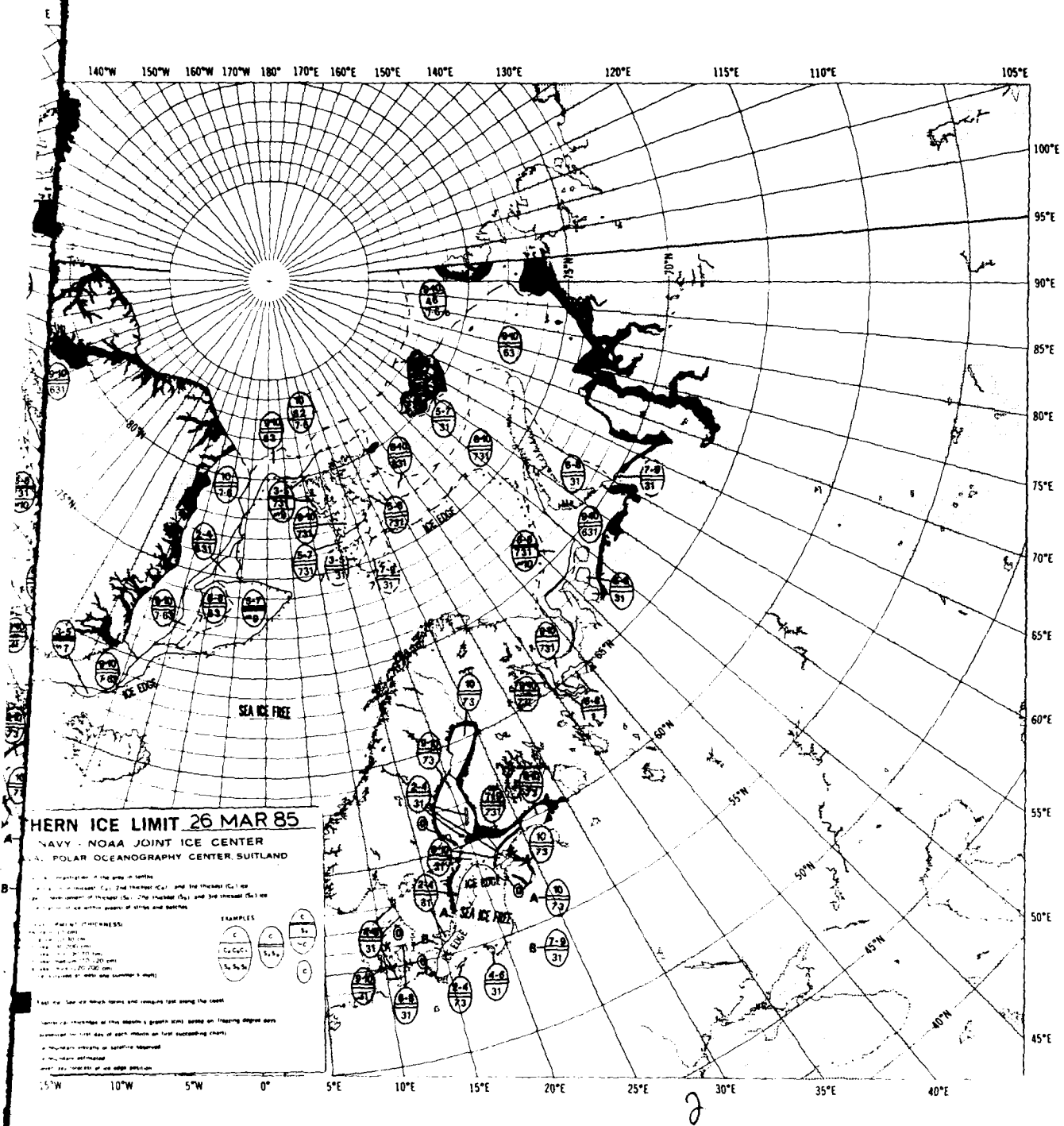








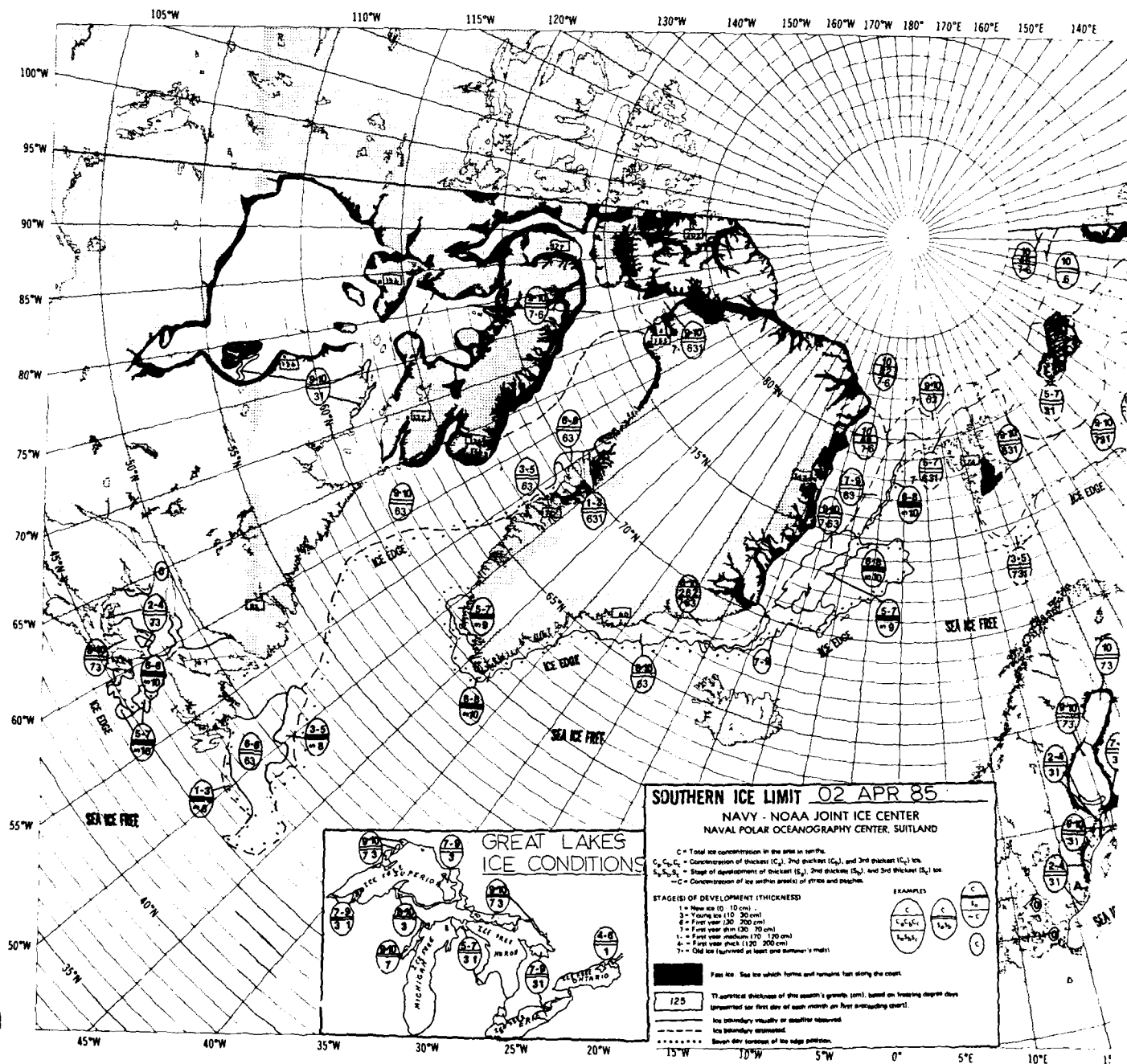


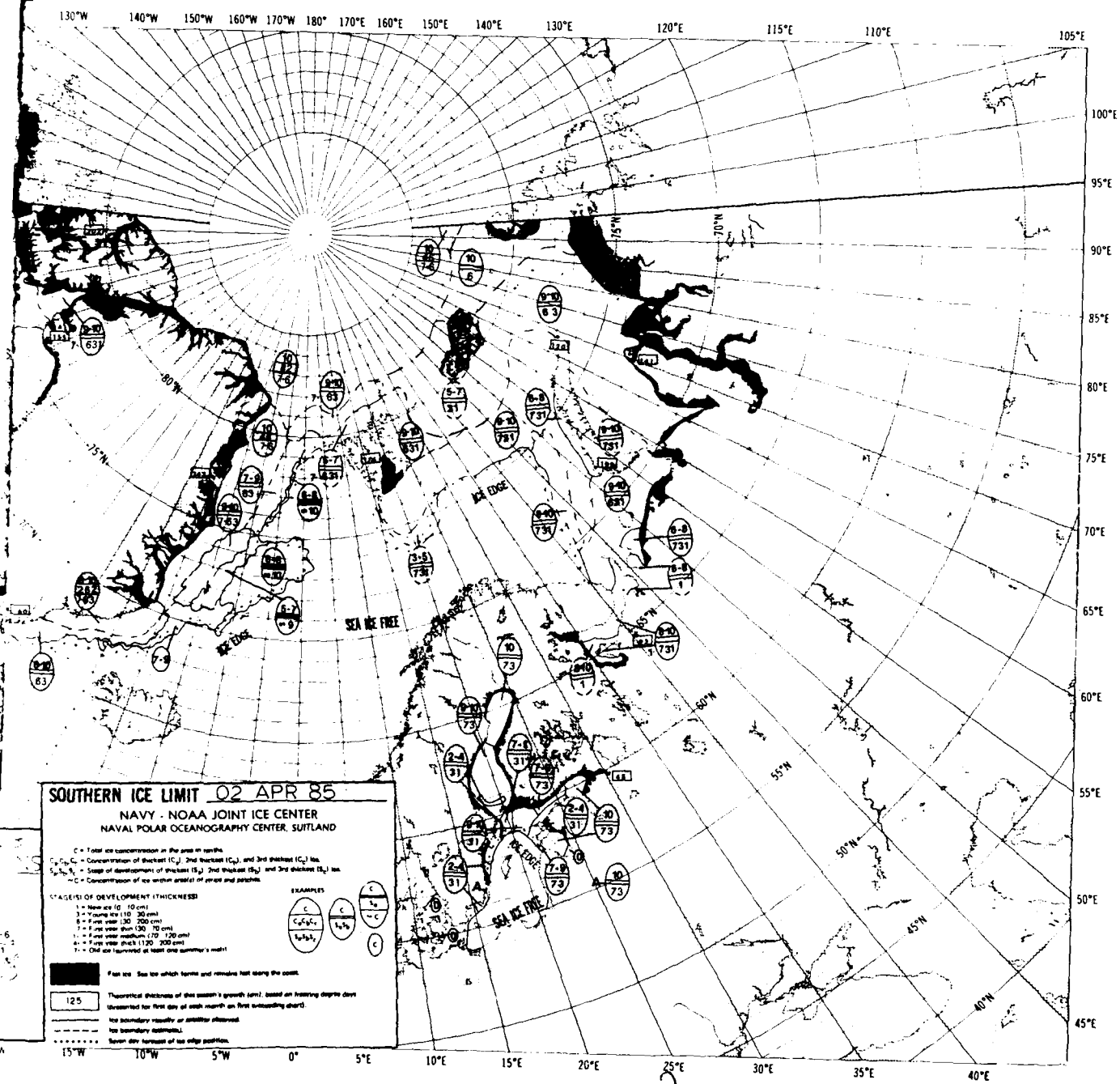


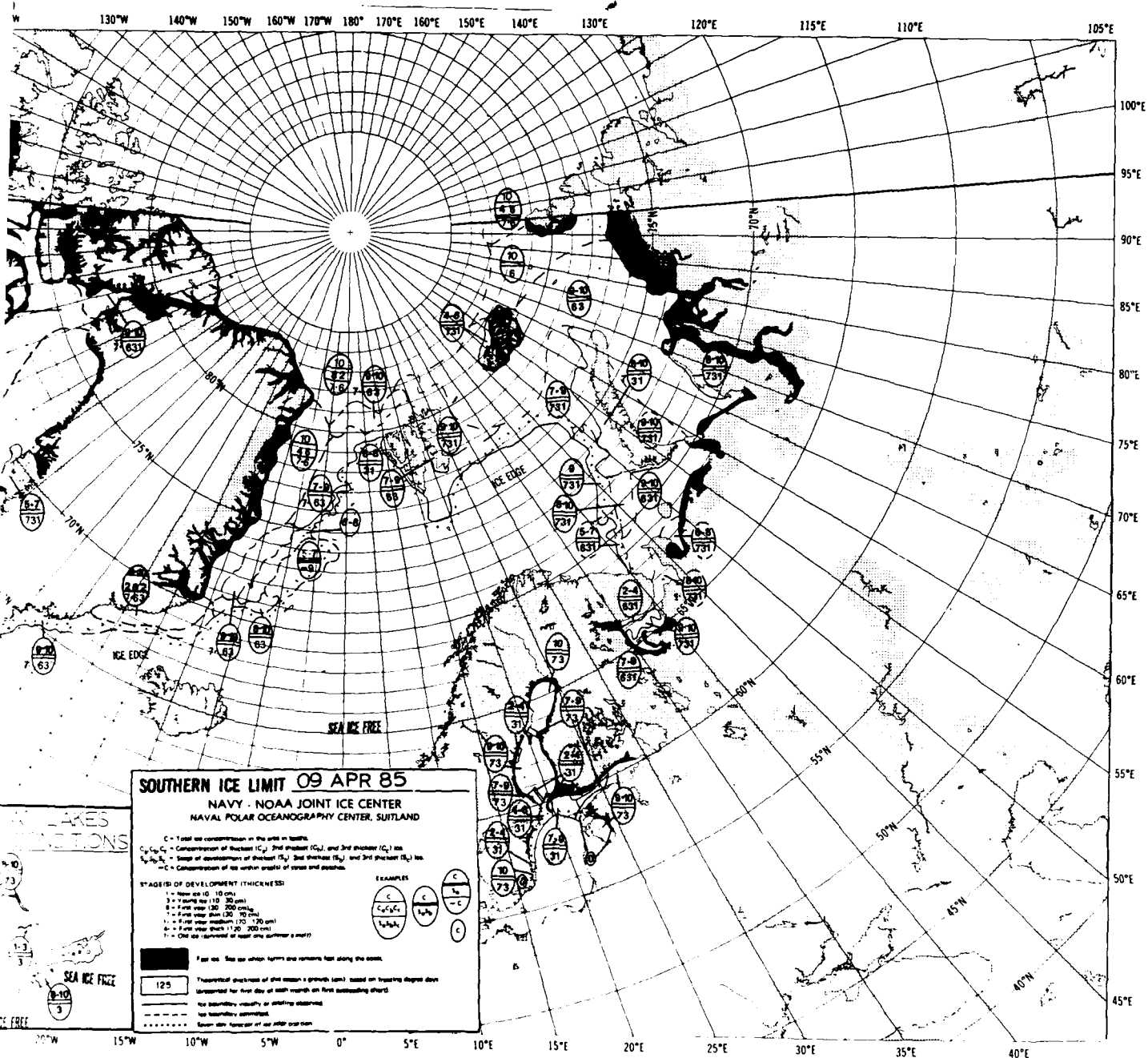
NORTHERN ICE LIMIT 26 MAR 85
 NAVY - NOAA JOINT ICE CENTER
 U.S. POLAR OCEANOGRAPHY CENTER, SUITLAND

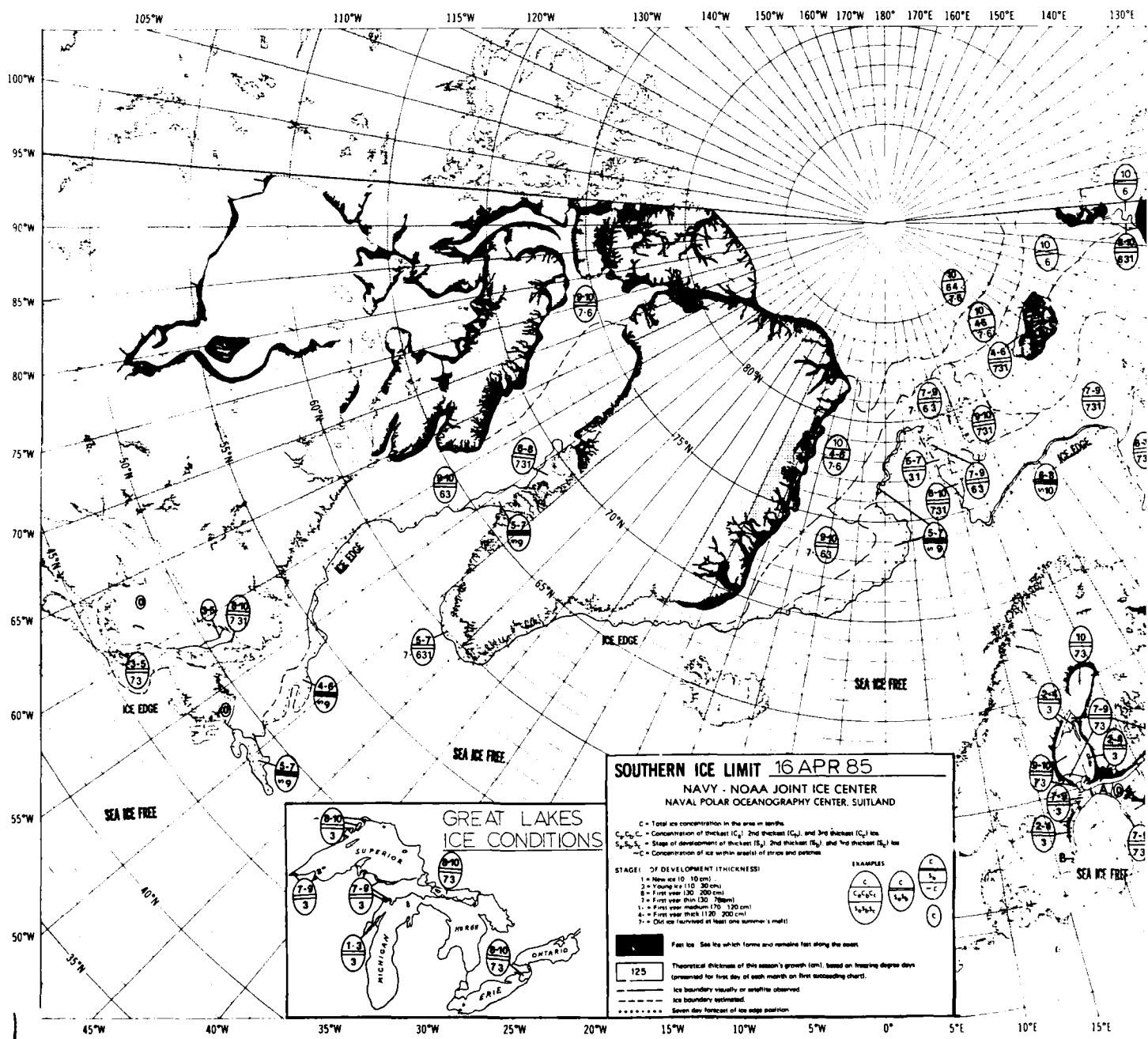
1. Interpretation of the map is as follows:
 a. The number in the numerator (N) is the thickness (in feet) of the ice.
 b. The number in the denominator (D) is the age (in days) of the ice.
 c. The number in the denominator (D) is the age (in days) of the ice.
 d. The number in the denominator (D) is the age (in days) of the ice.

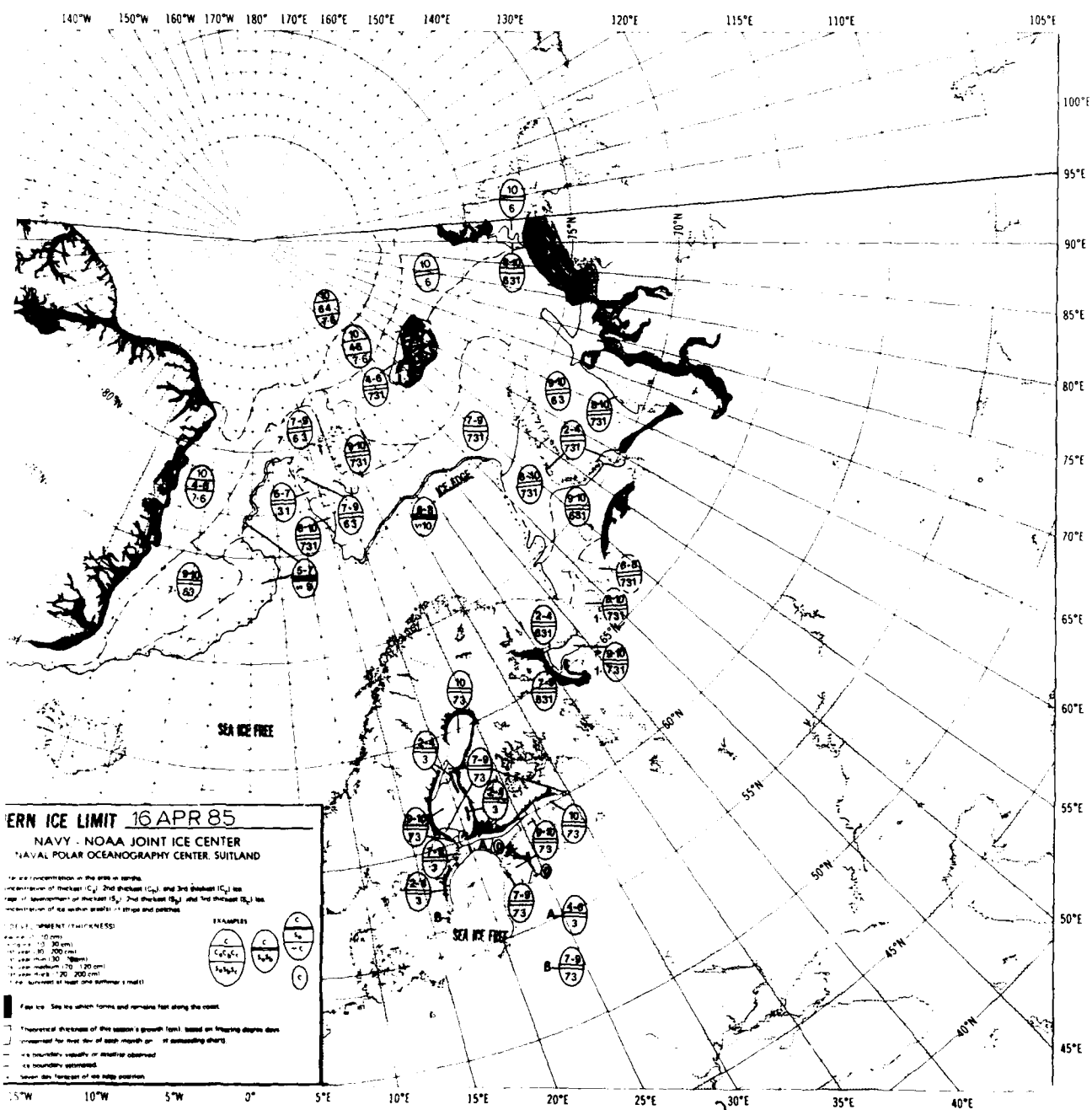
2. Examples of data point notation:
 a. 10/31
 b. 20/31
 c. 30/31
 d. 40/31
 e. 50/31
 f. 60/31
 g. 70/31
 h. 80/31
 i. 90/31
 j. 100/31

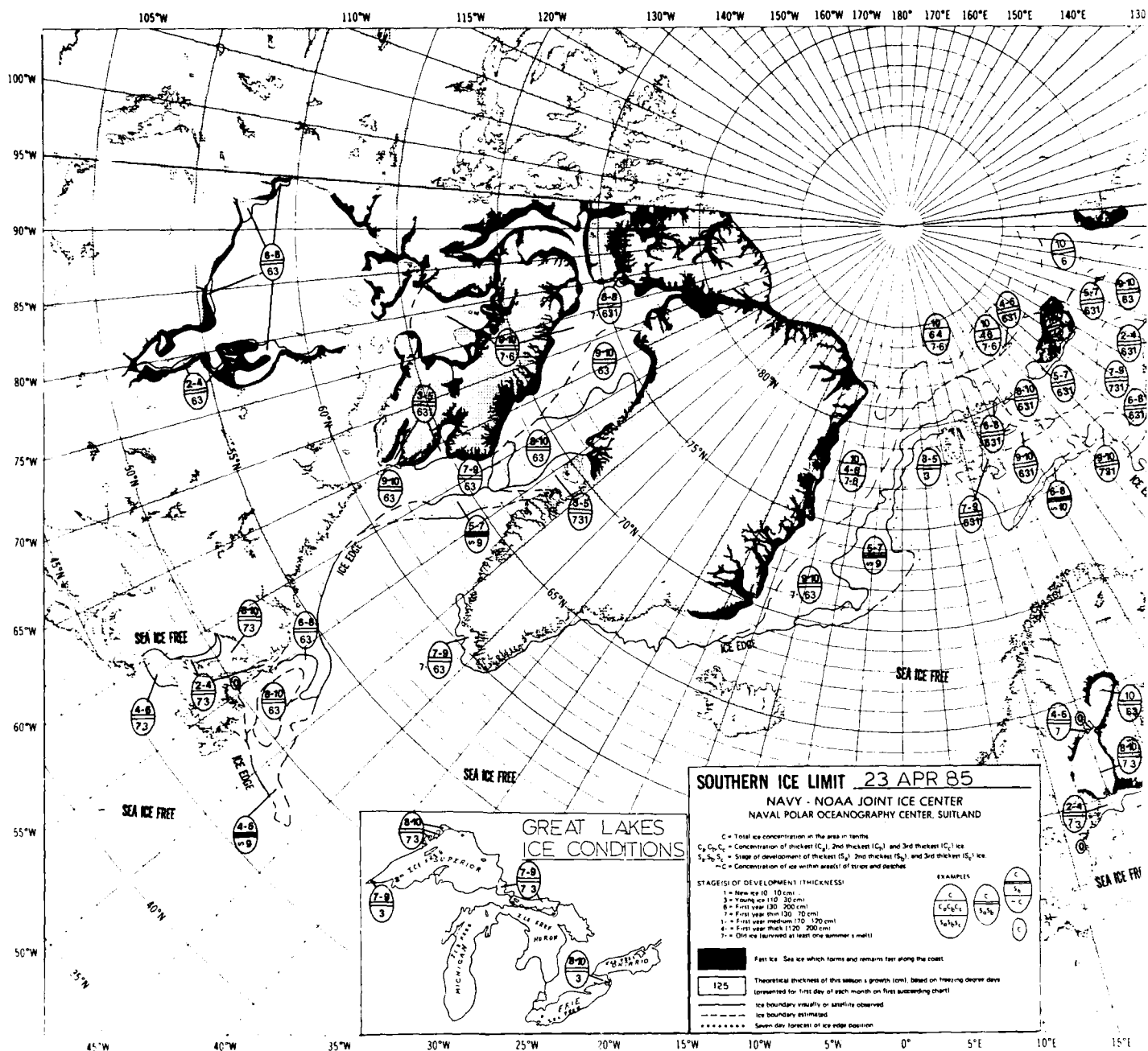


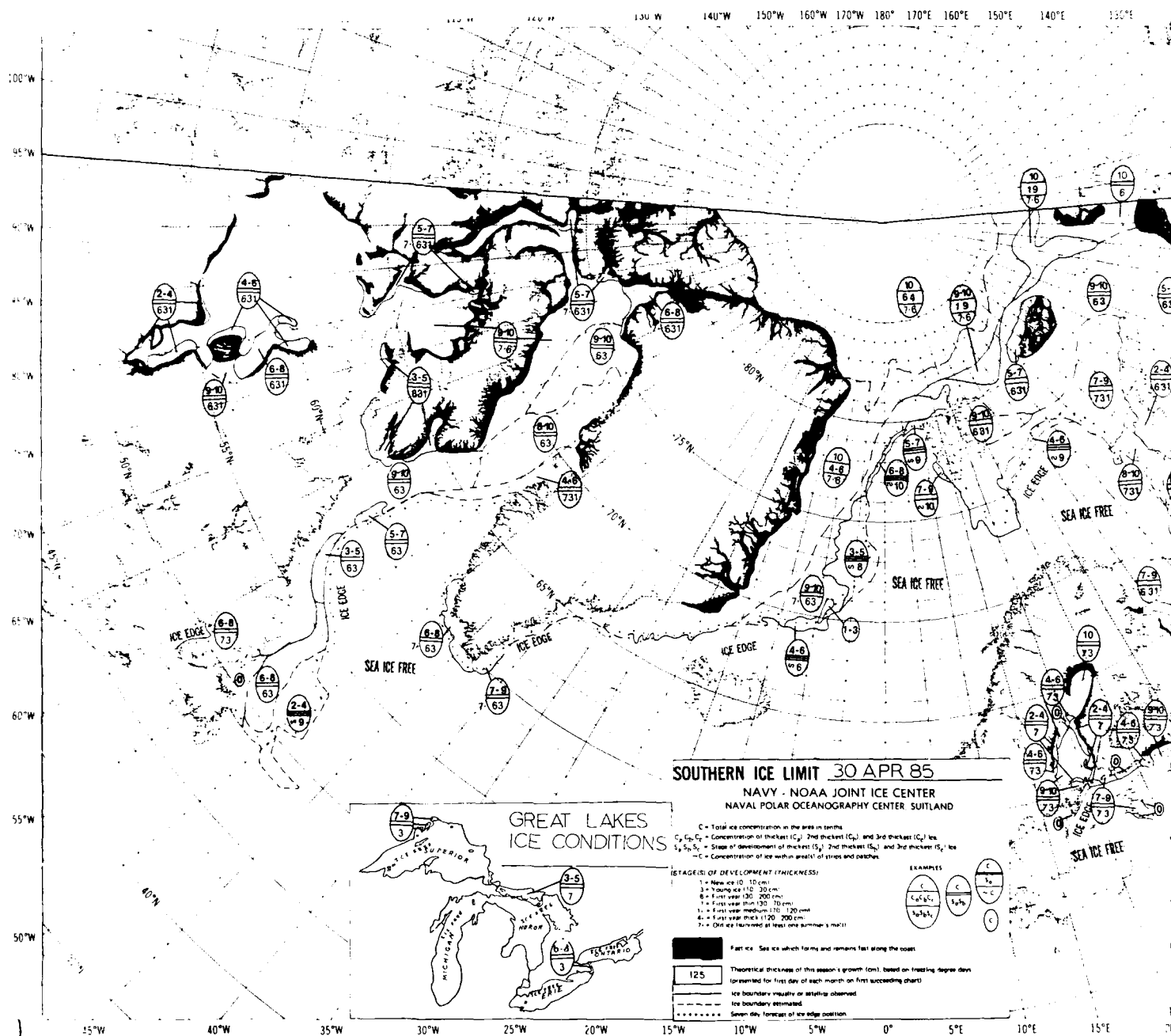


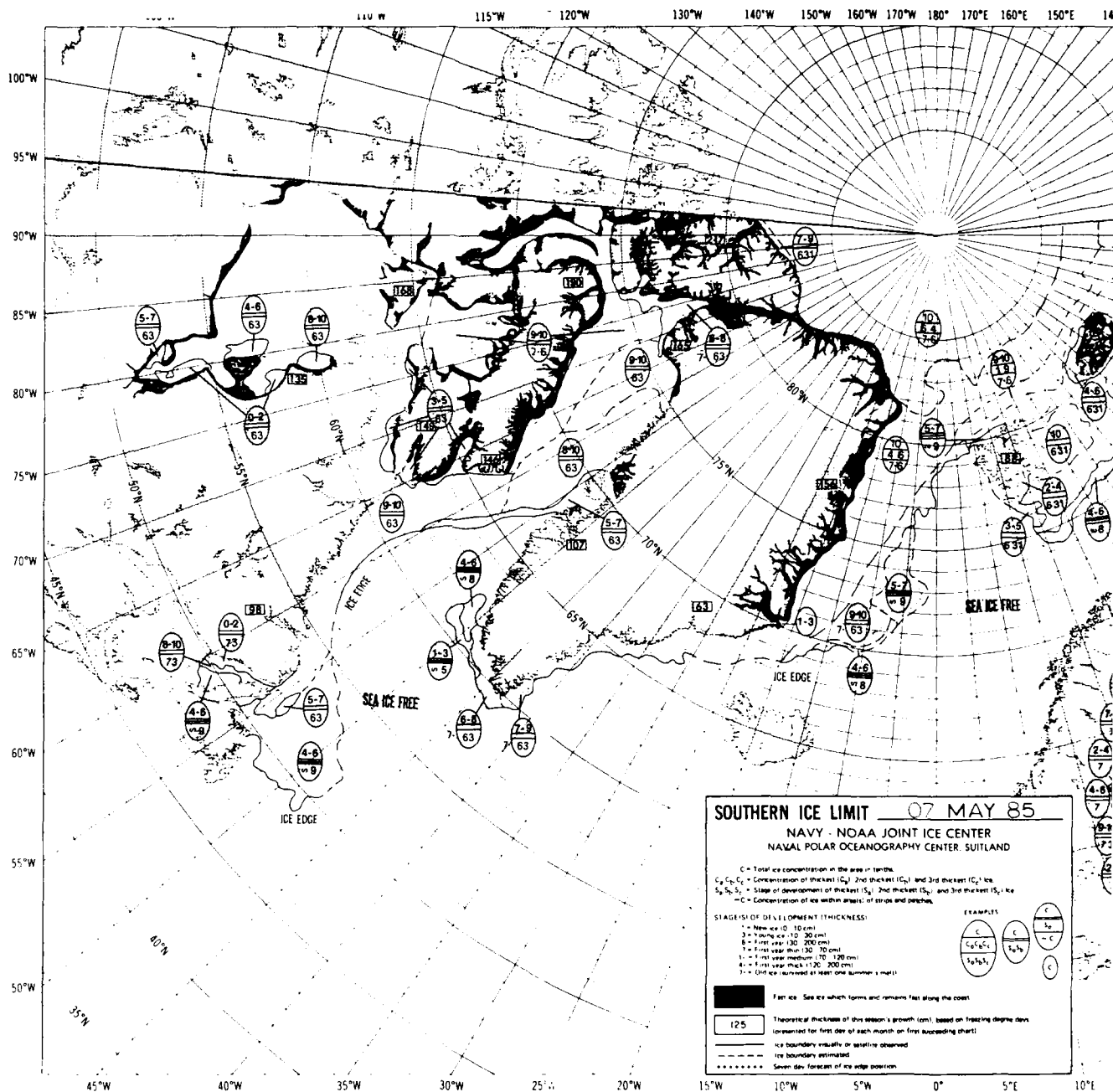


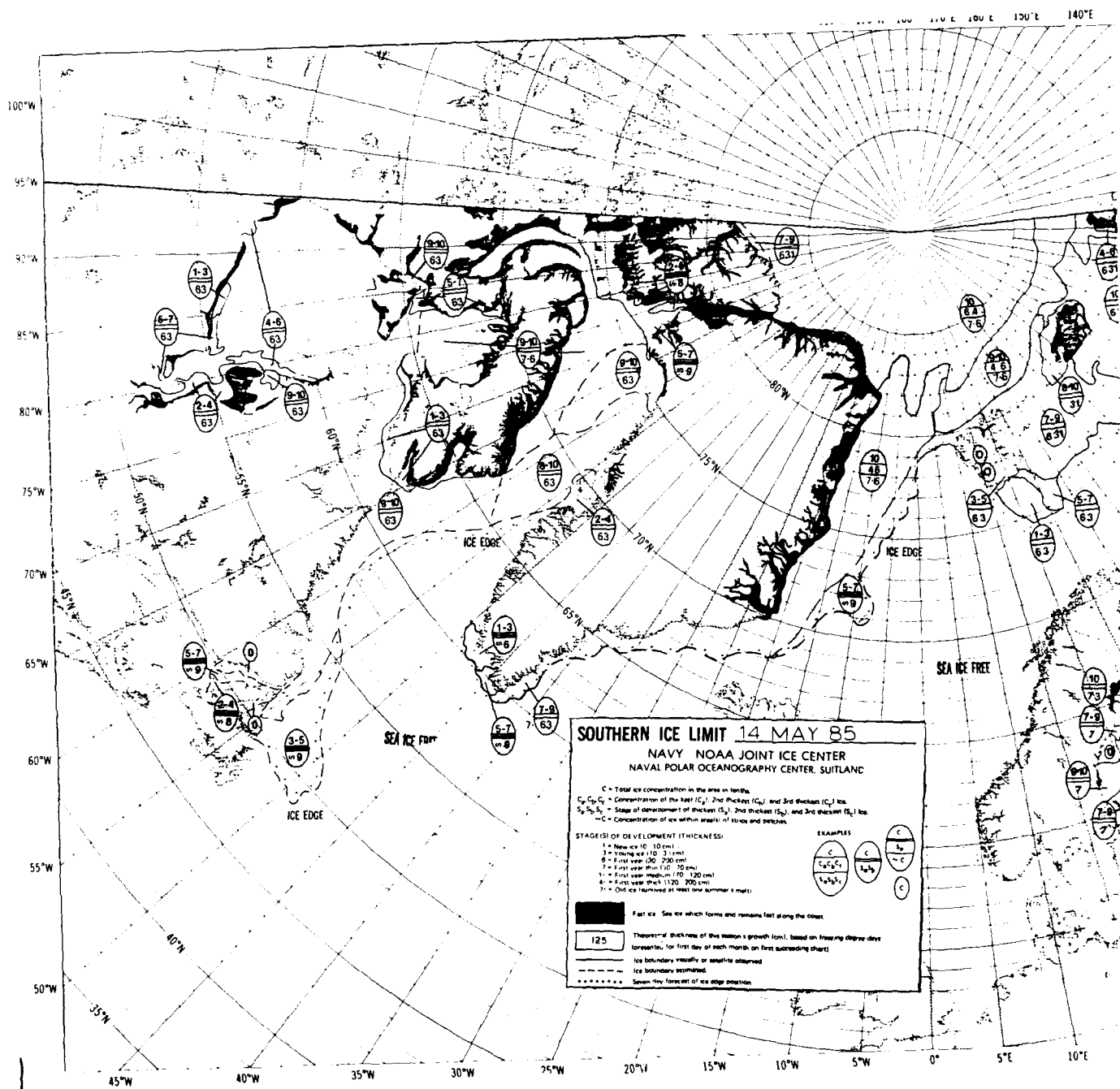


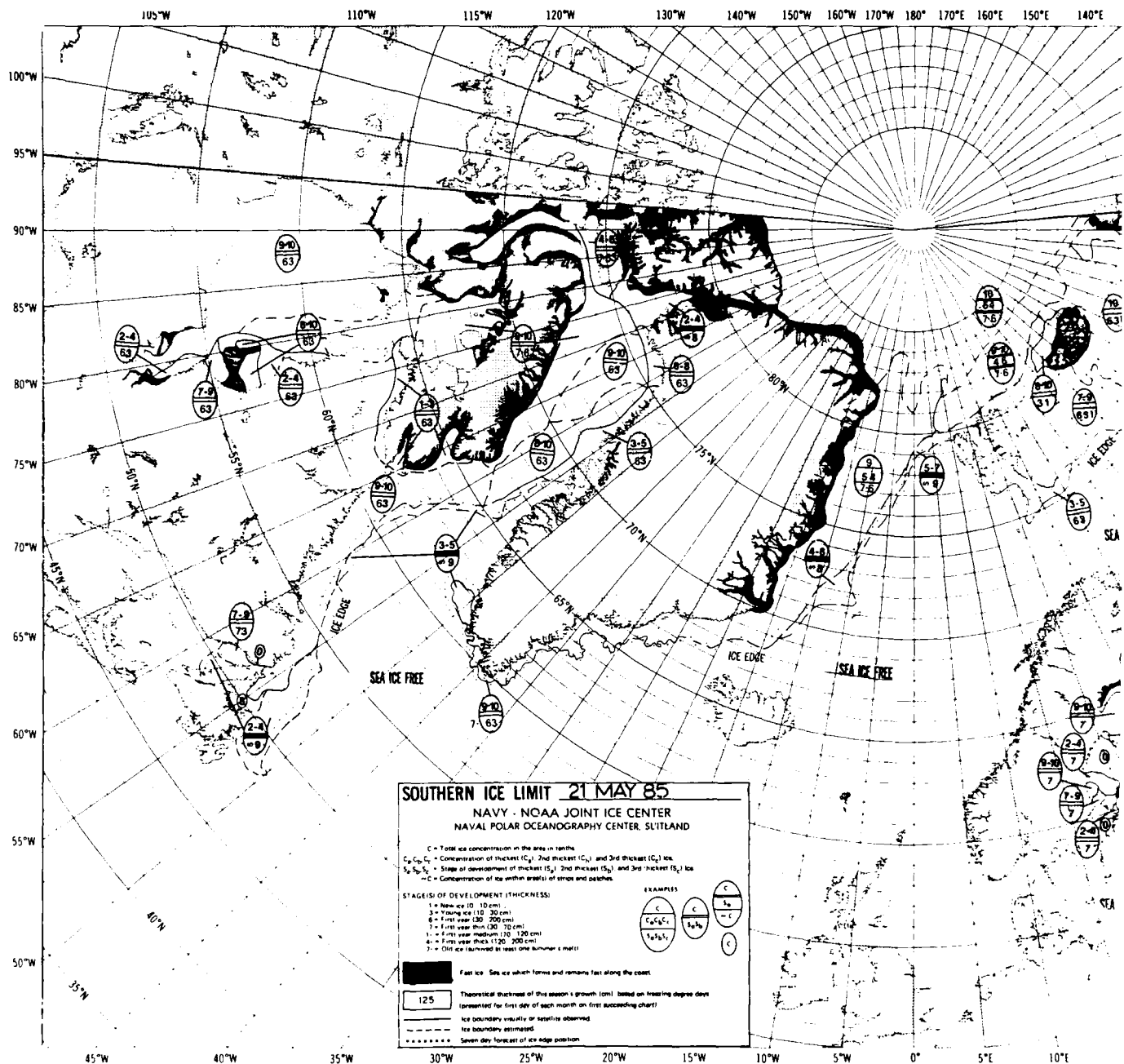


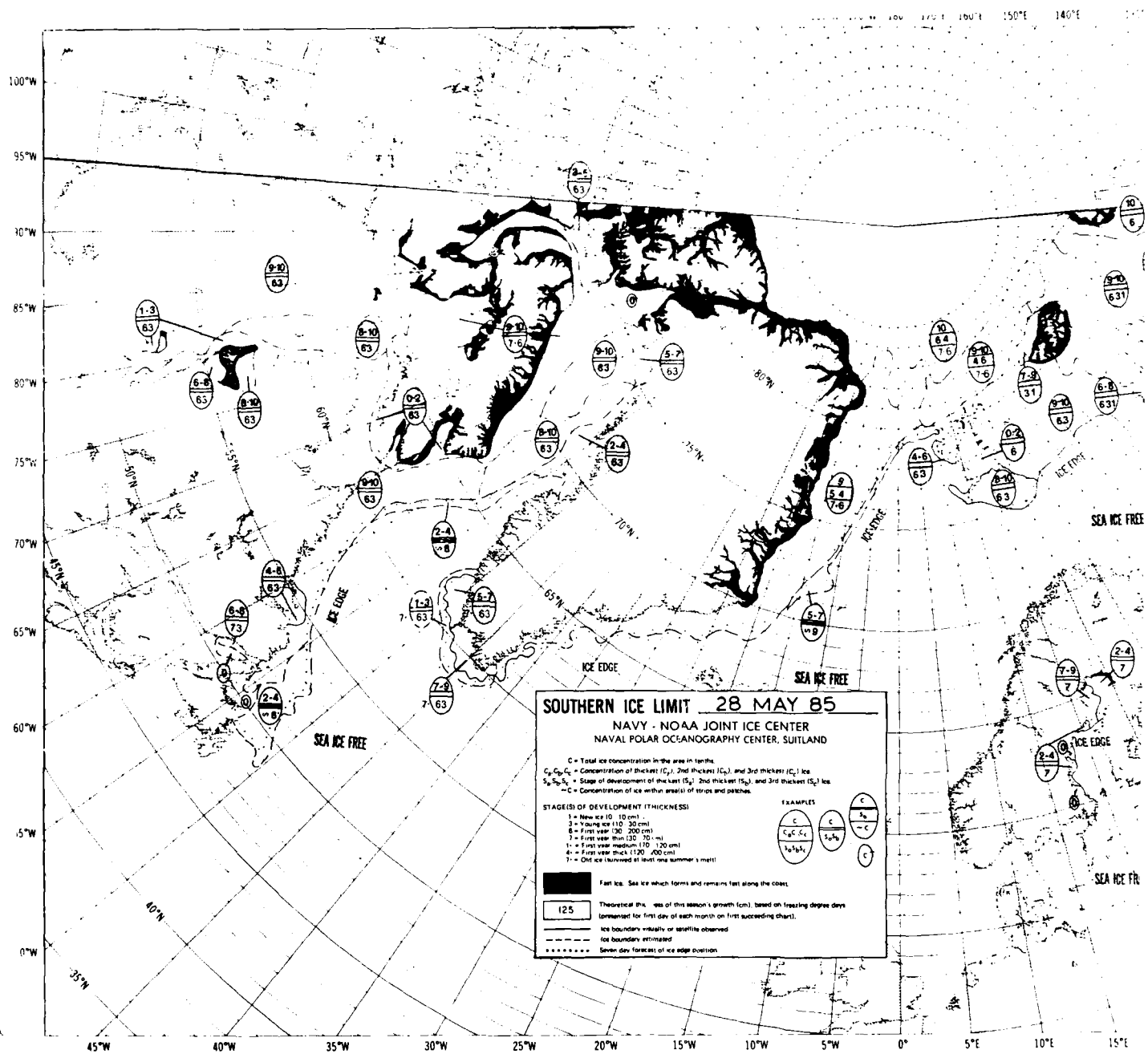


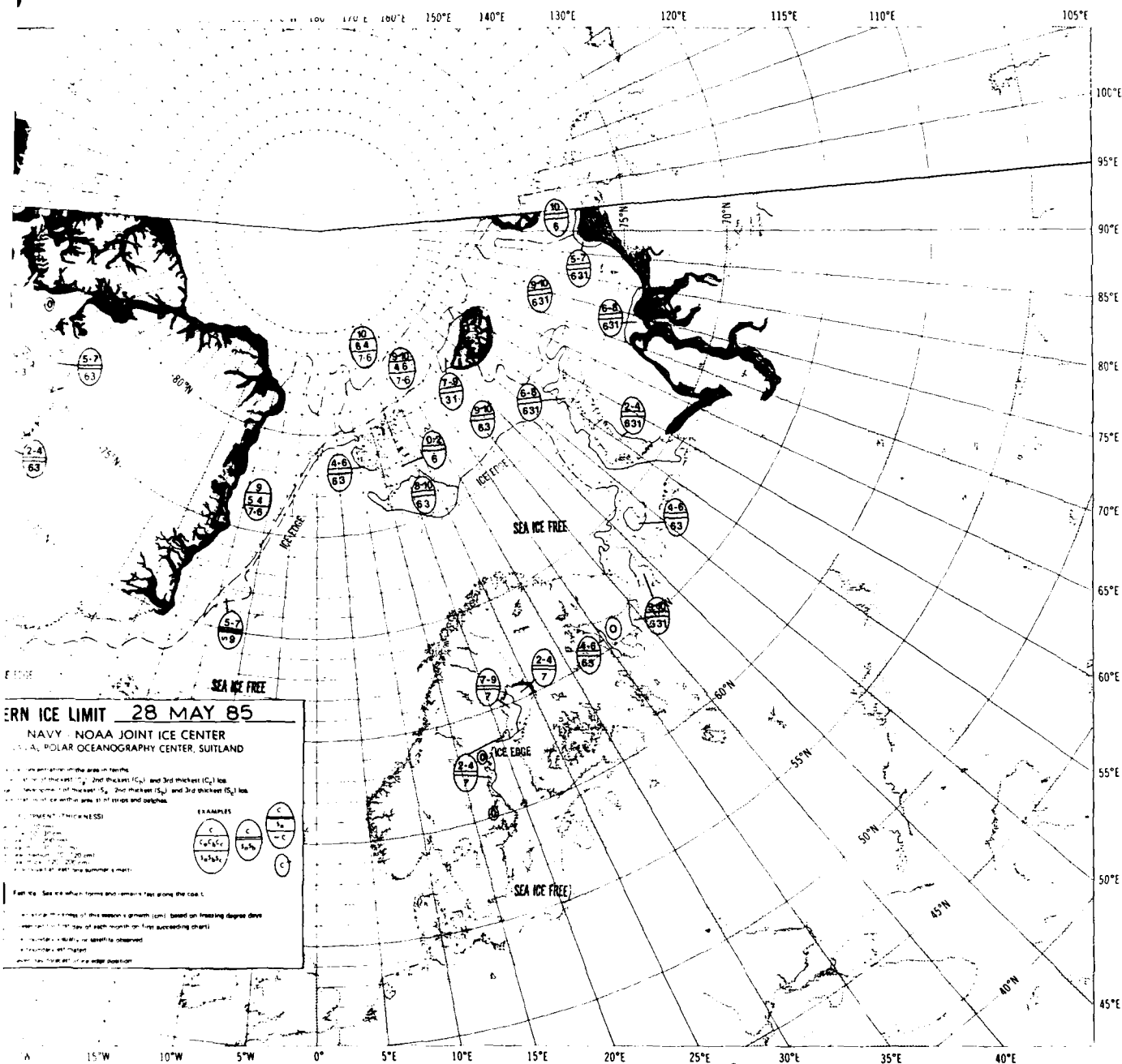


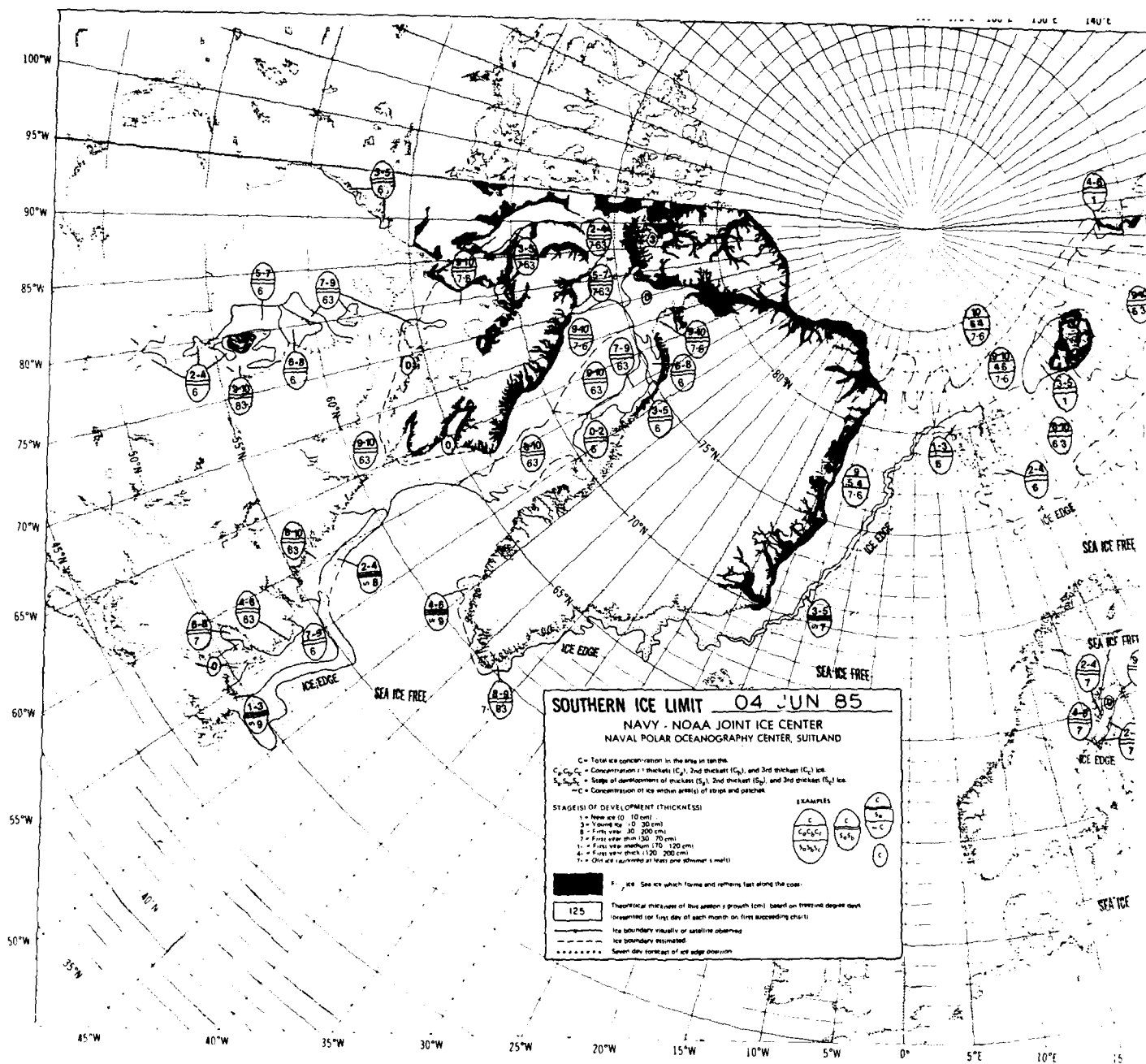


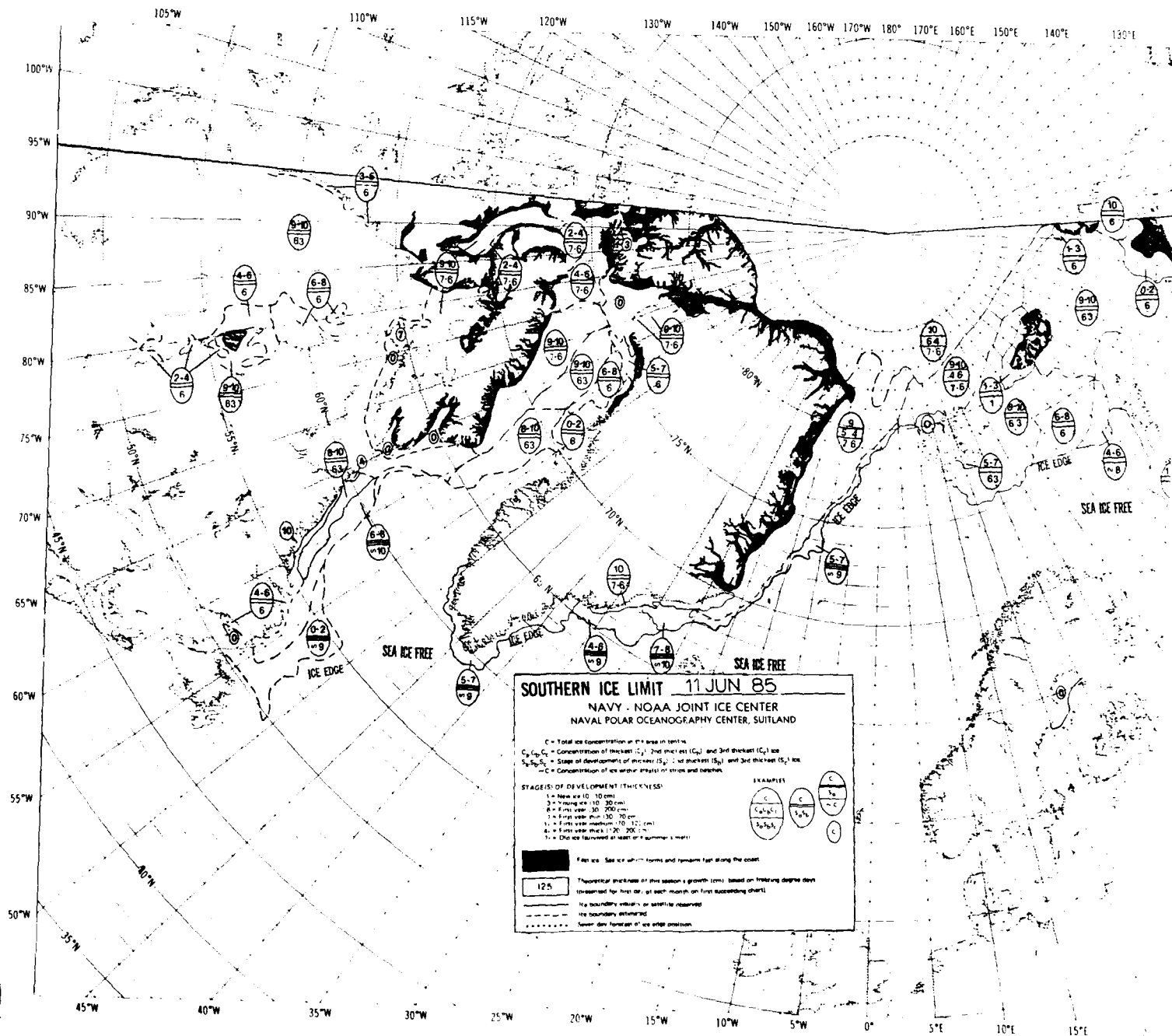


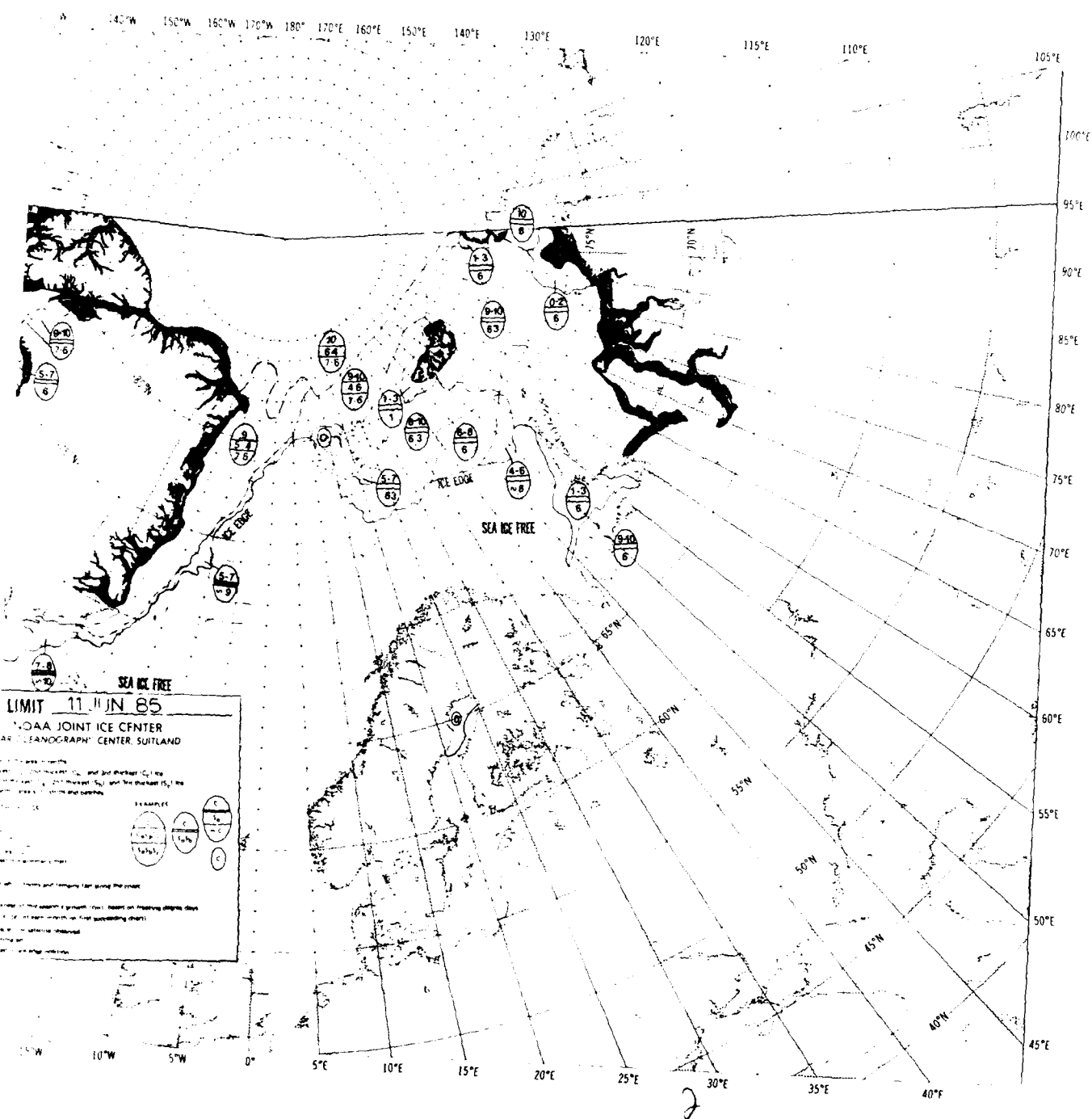


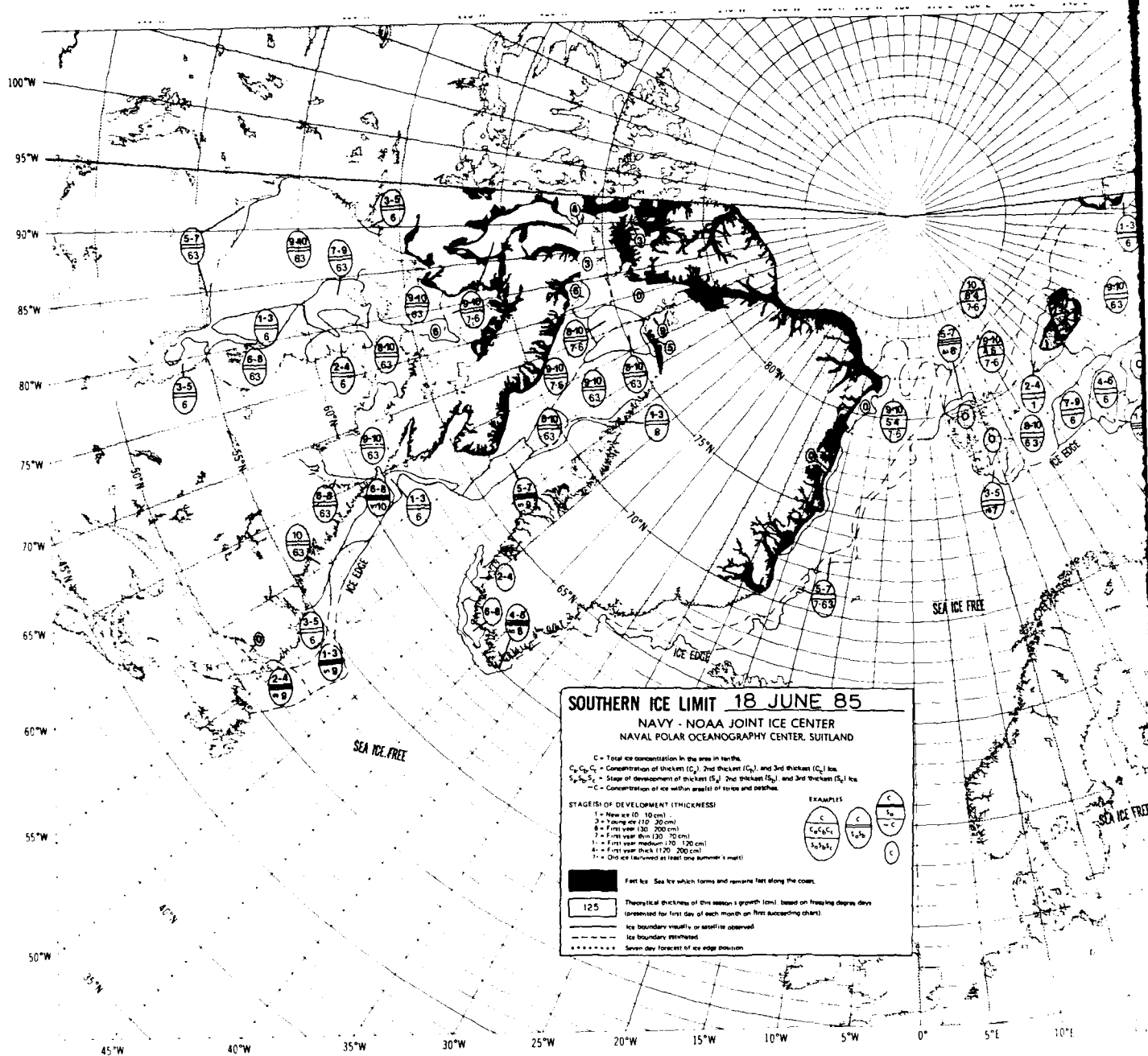


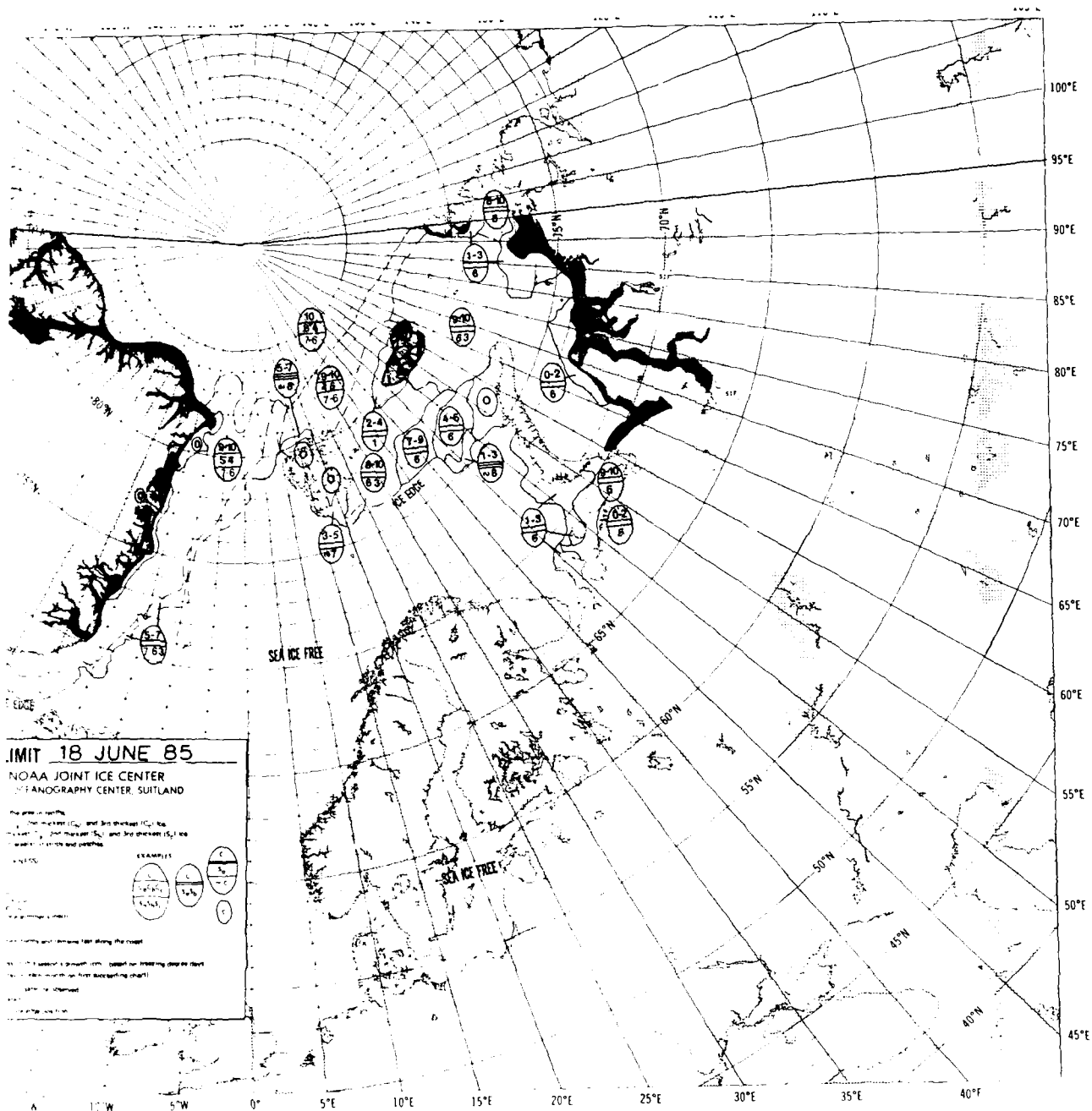


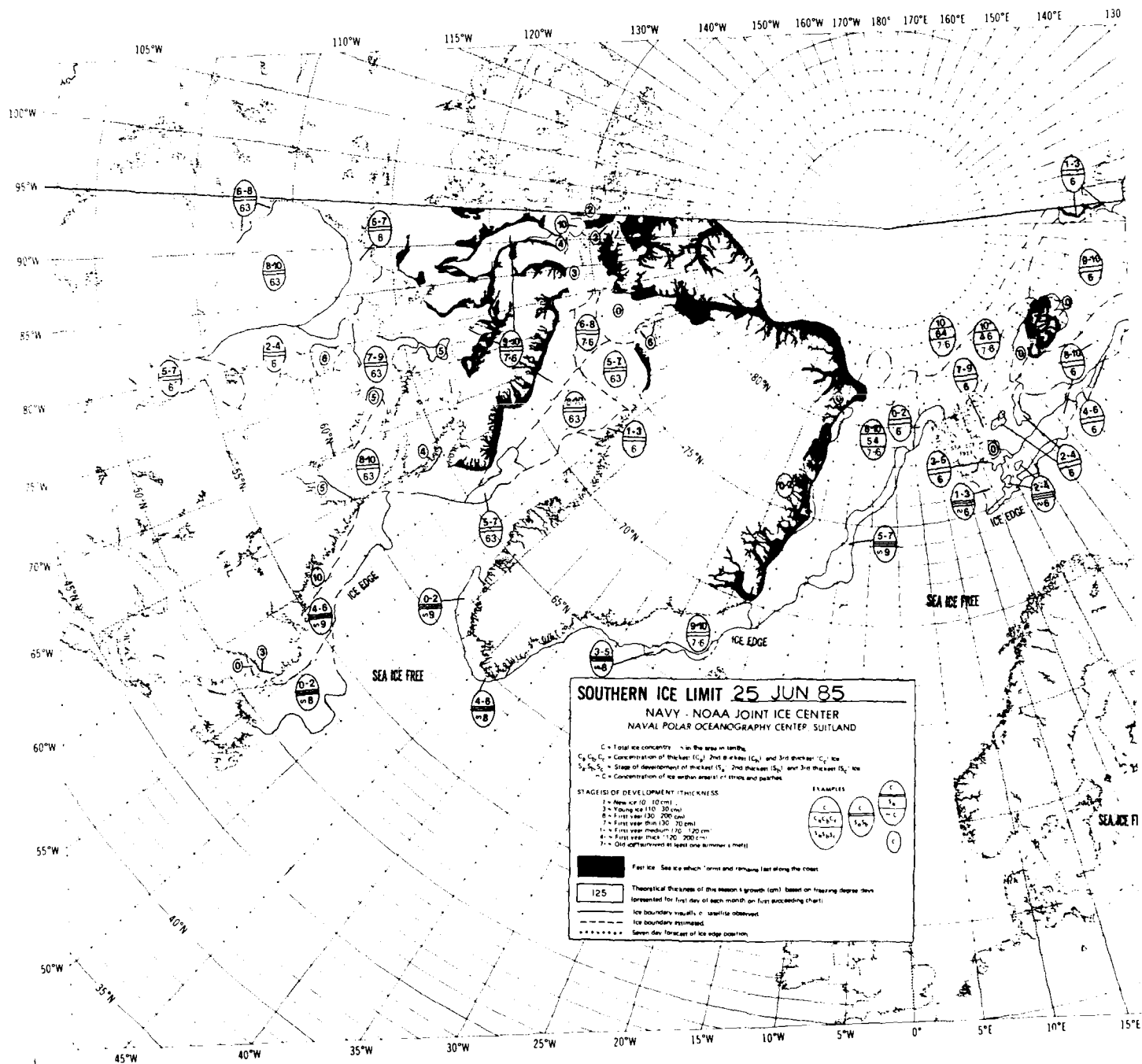


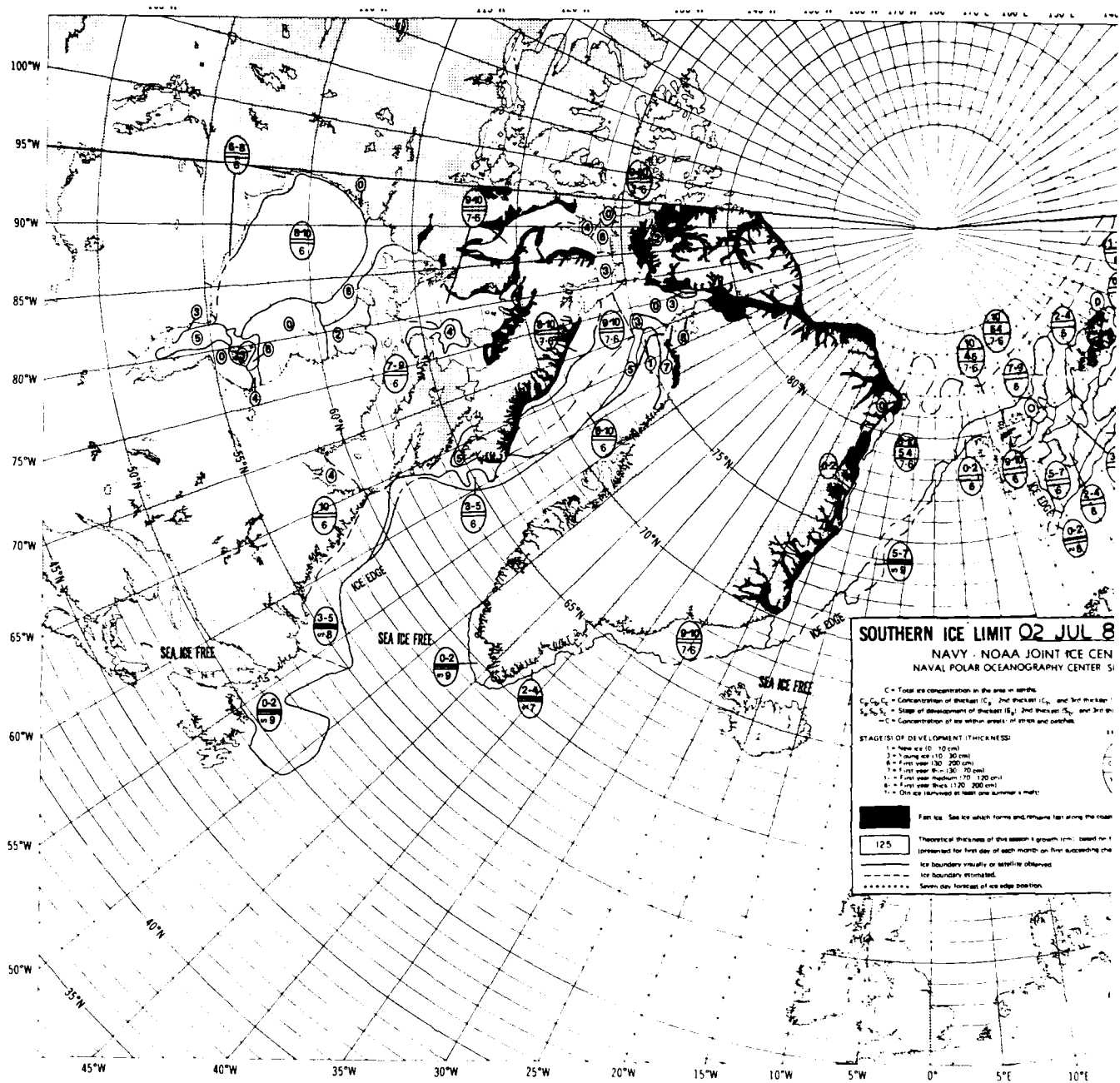


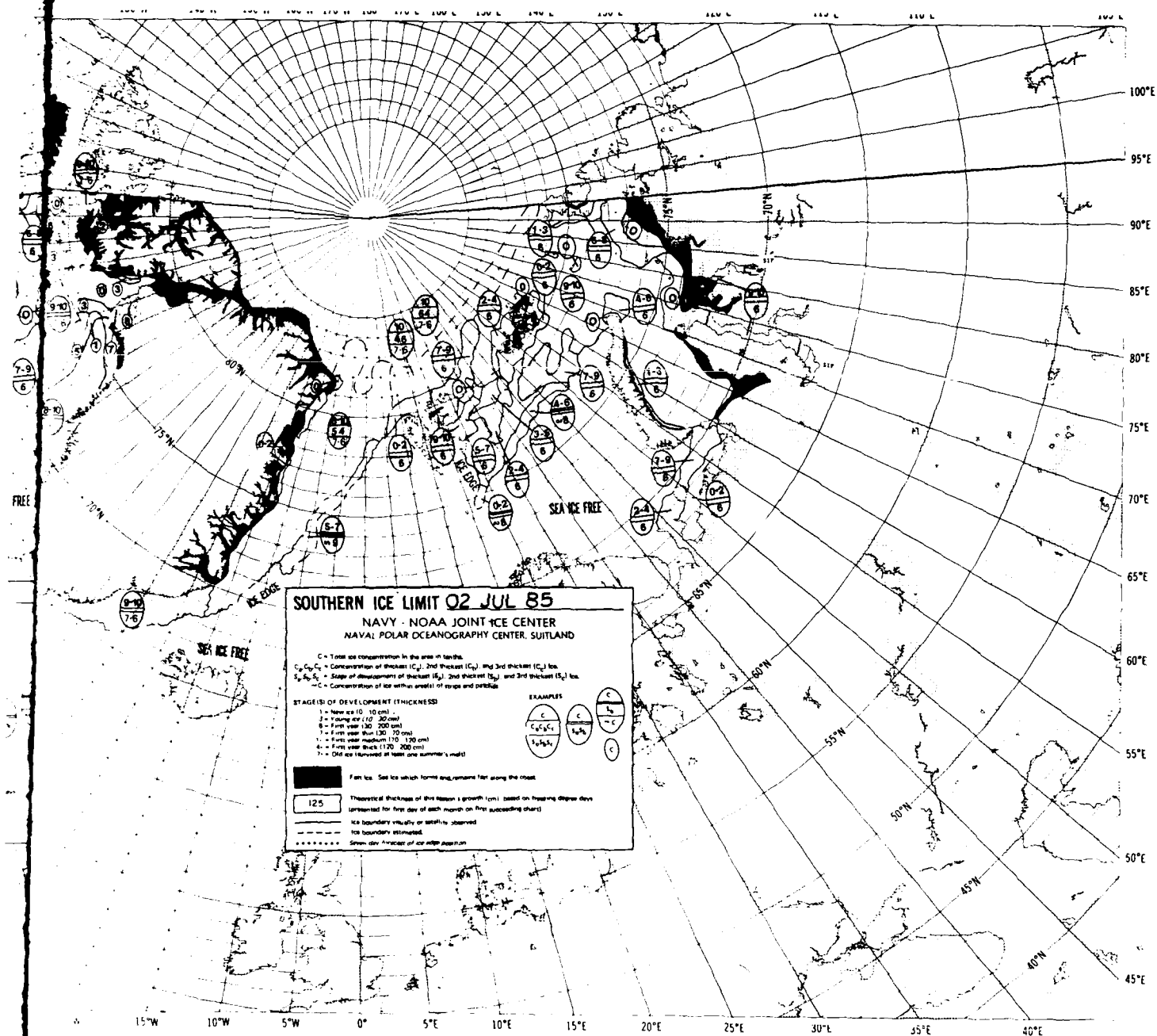


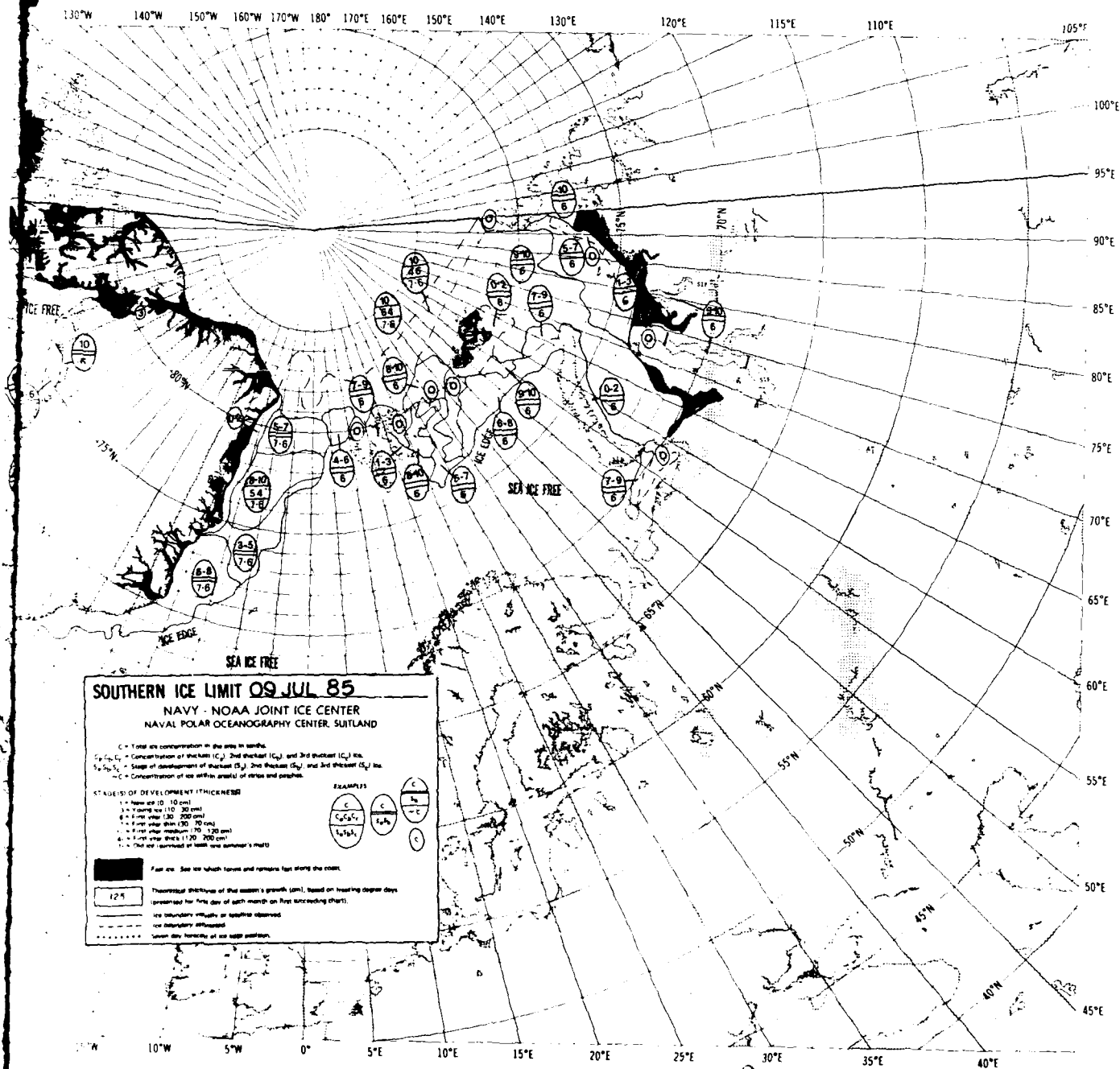


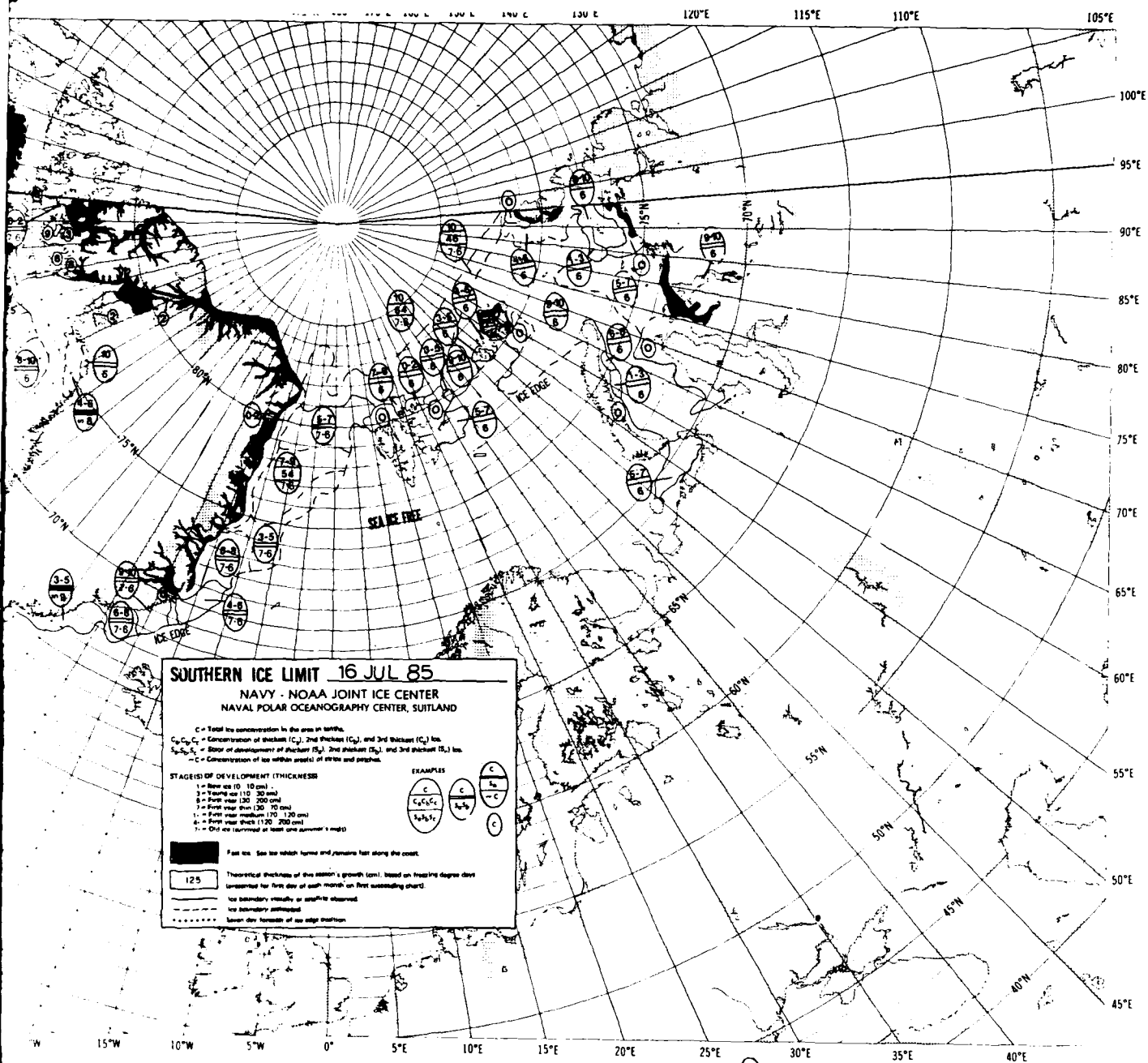


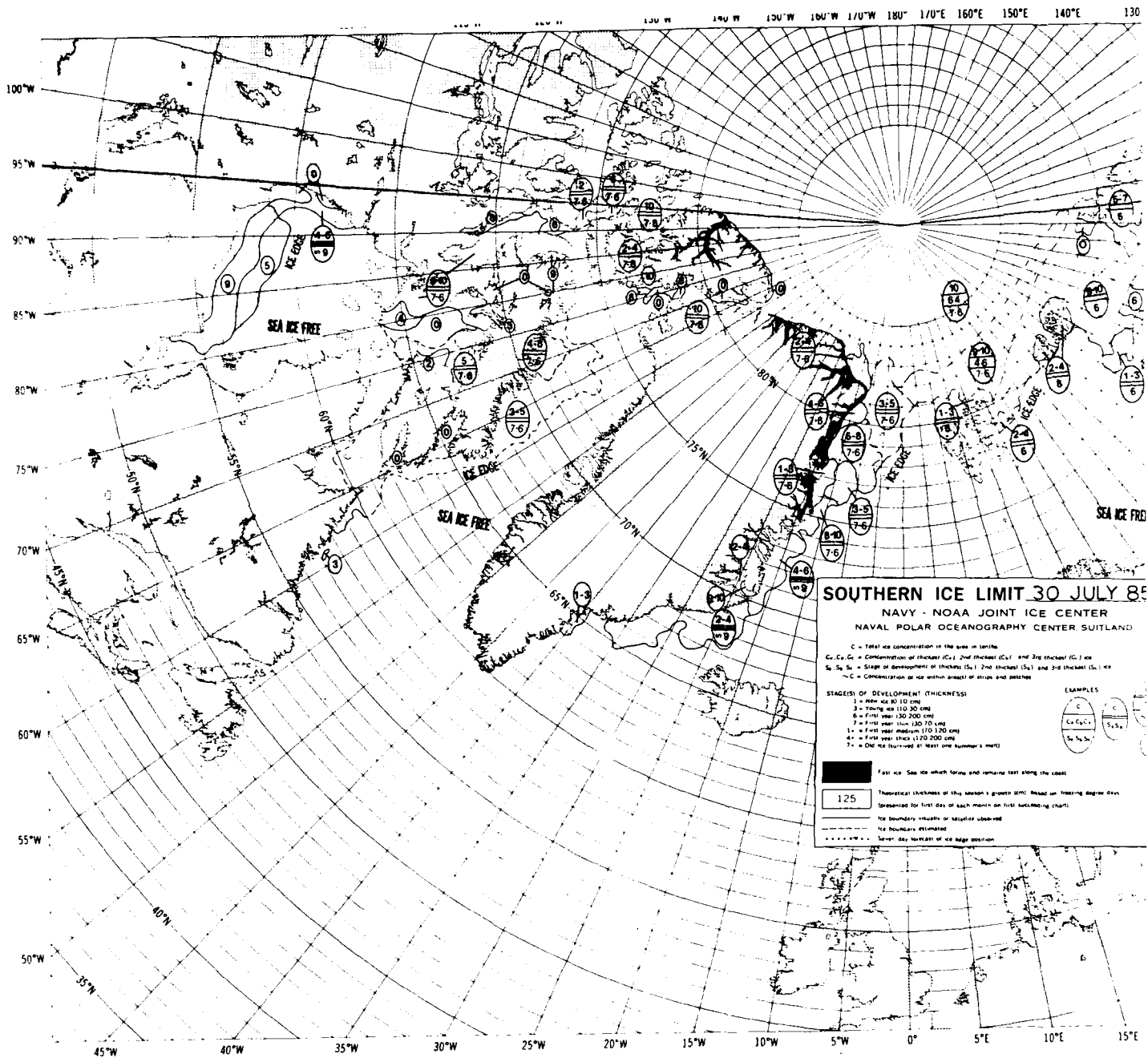


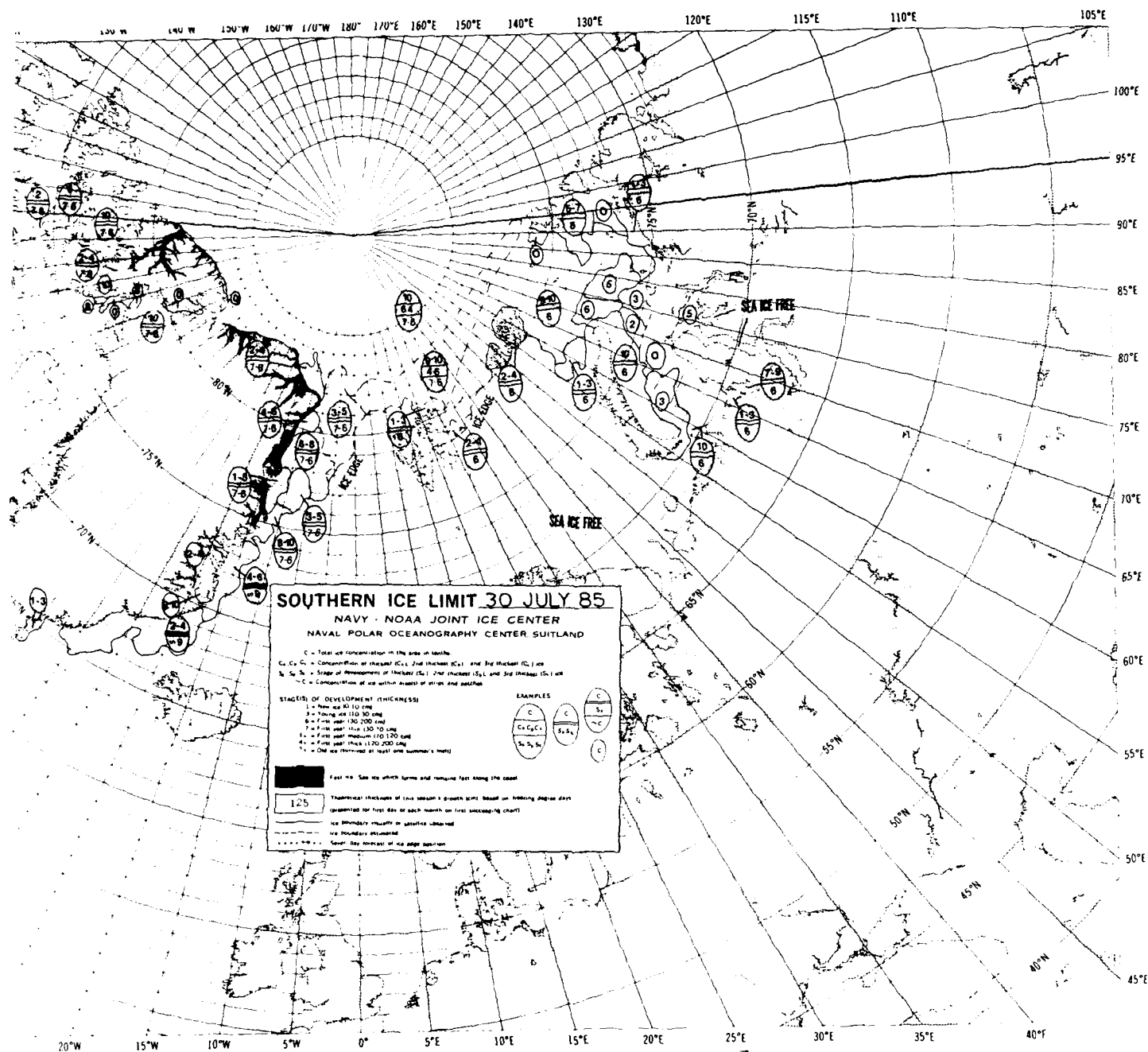


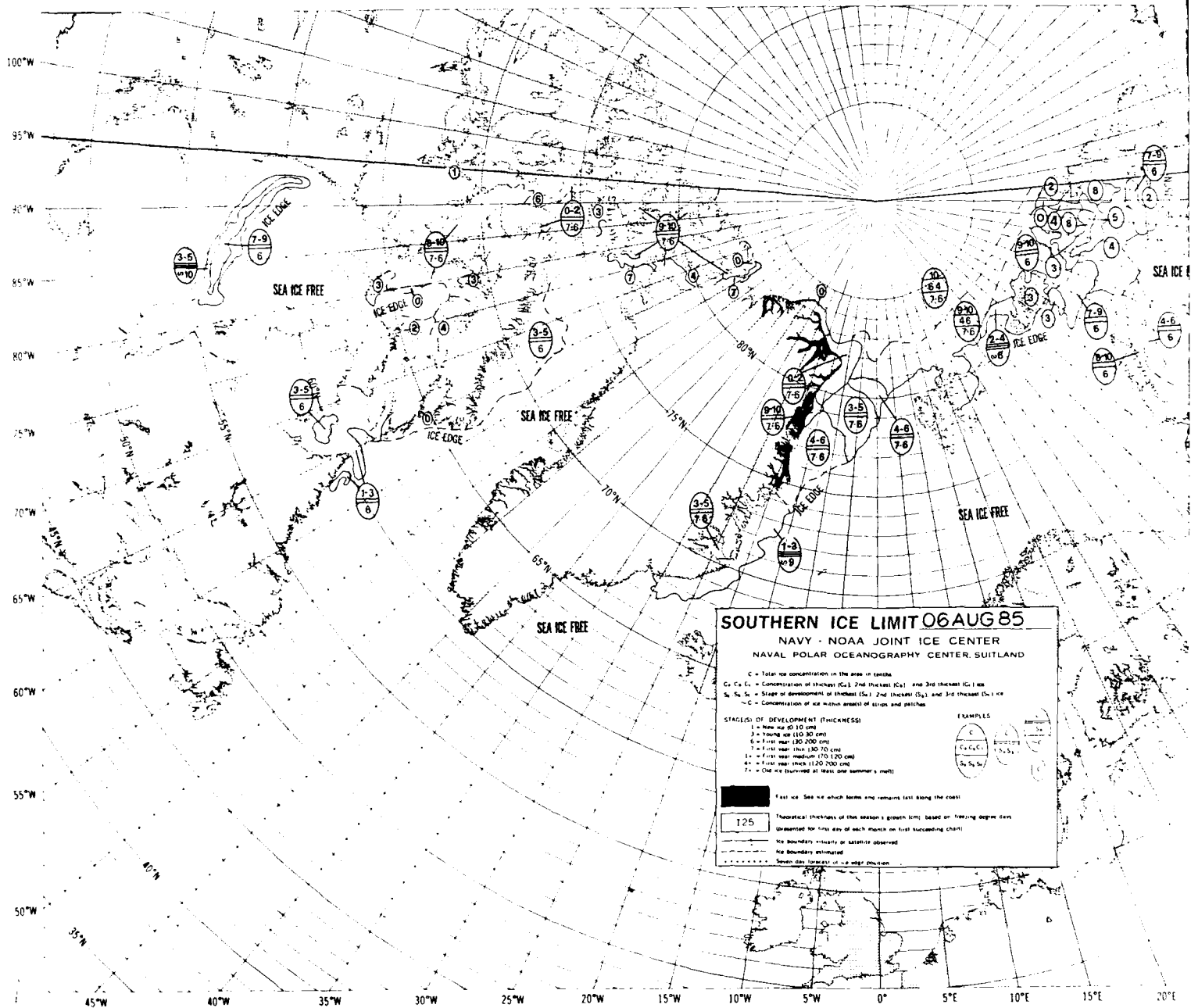


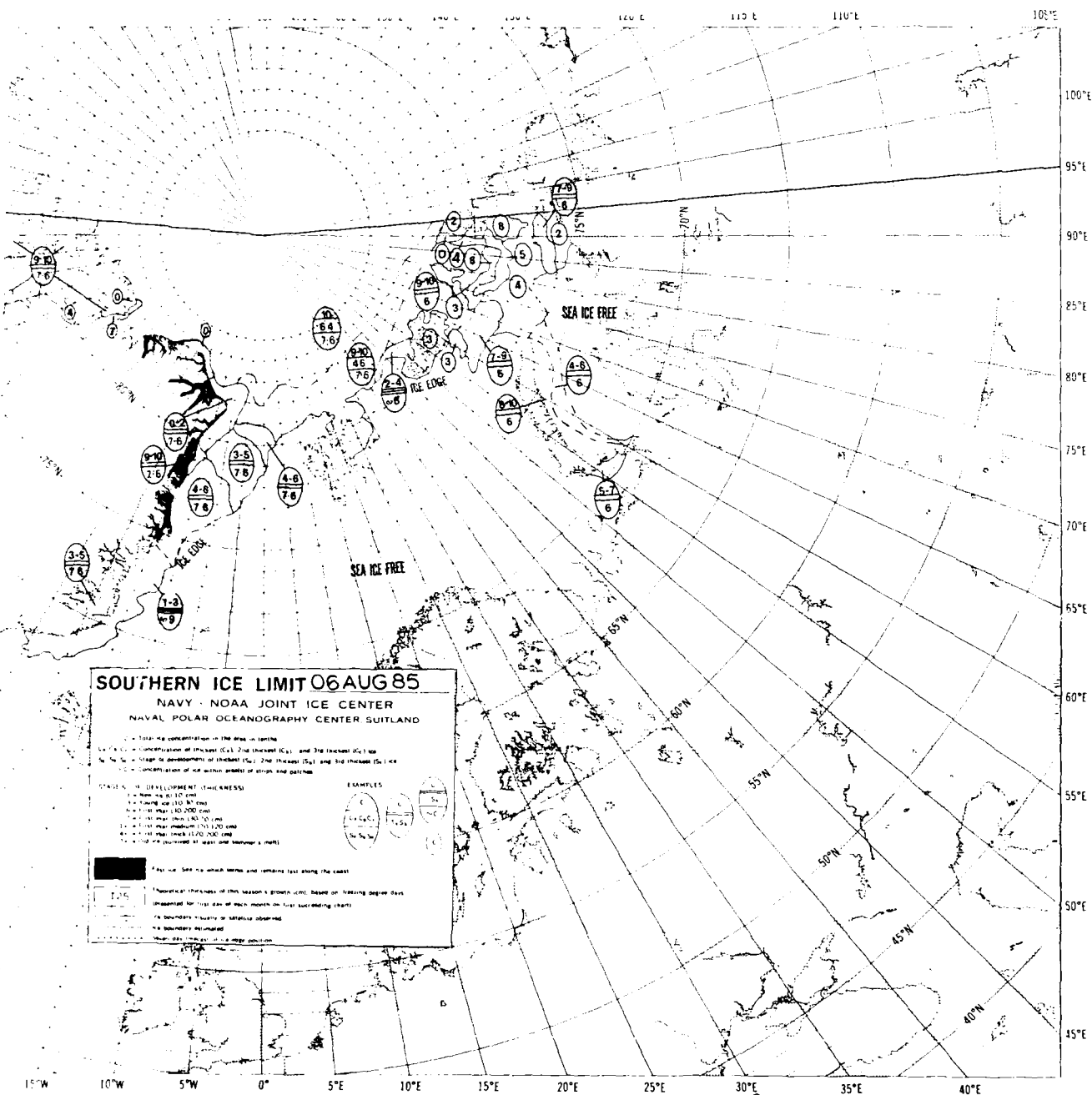


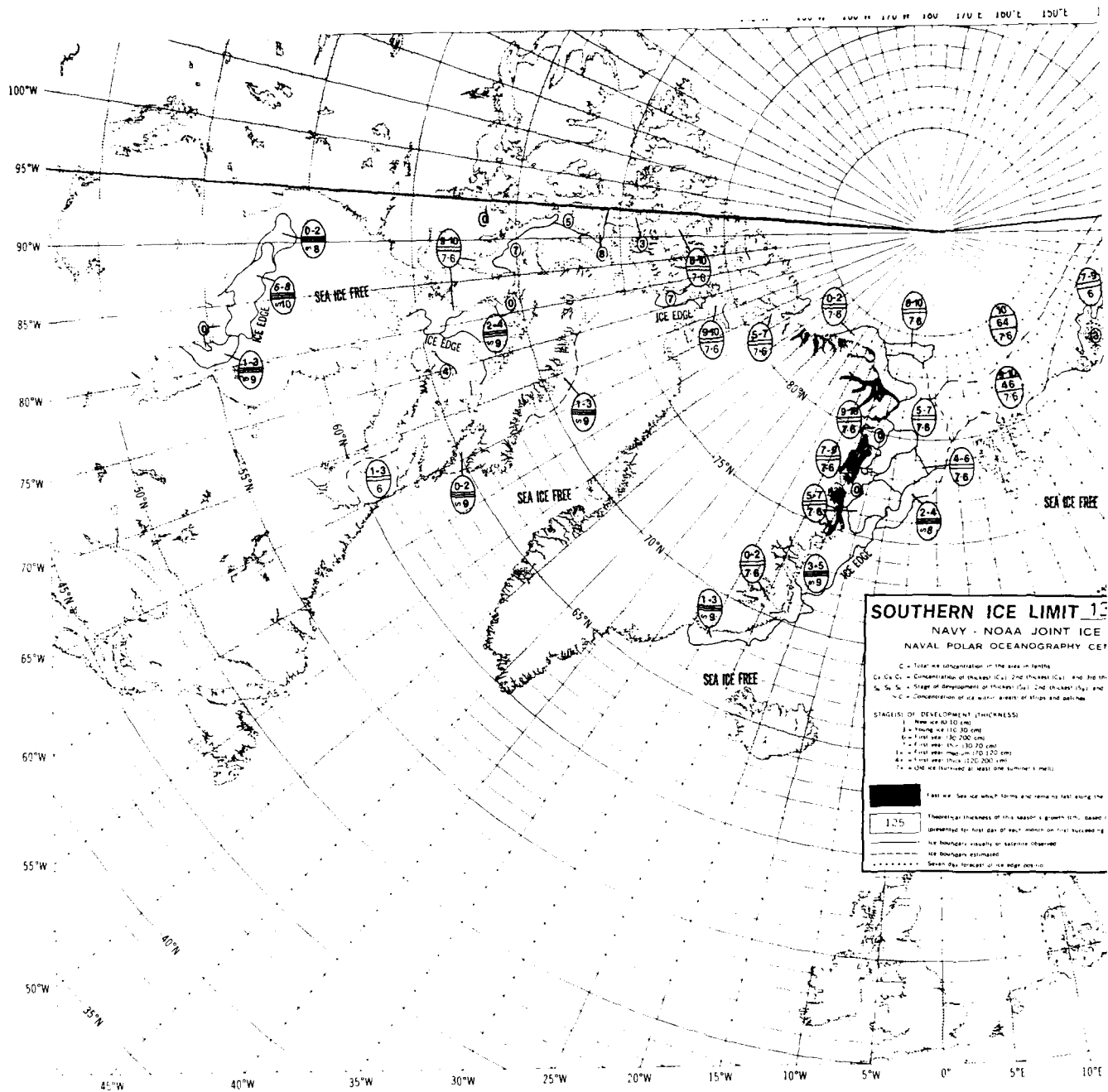


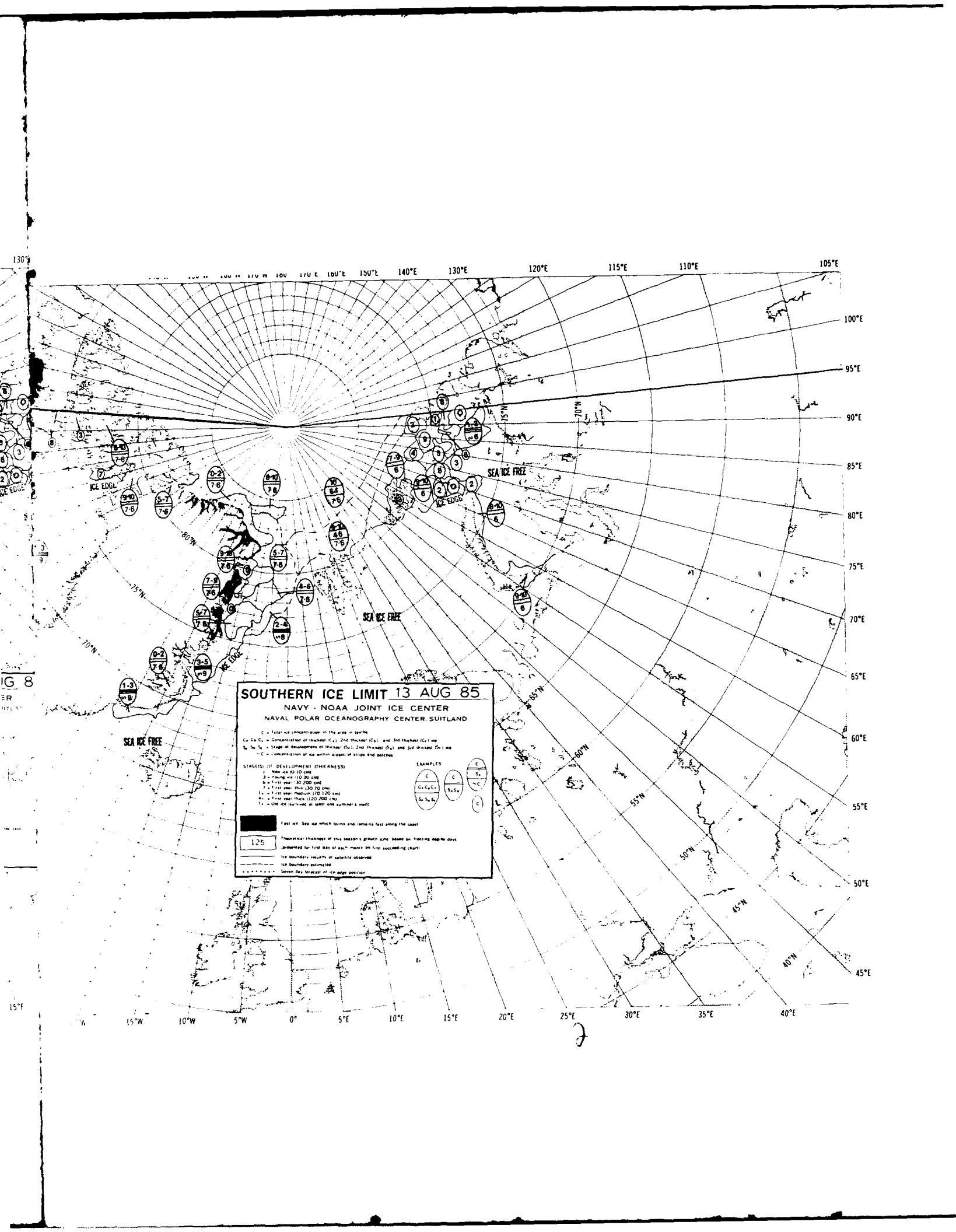


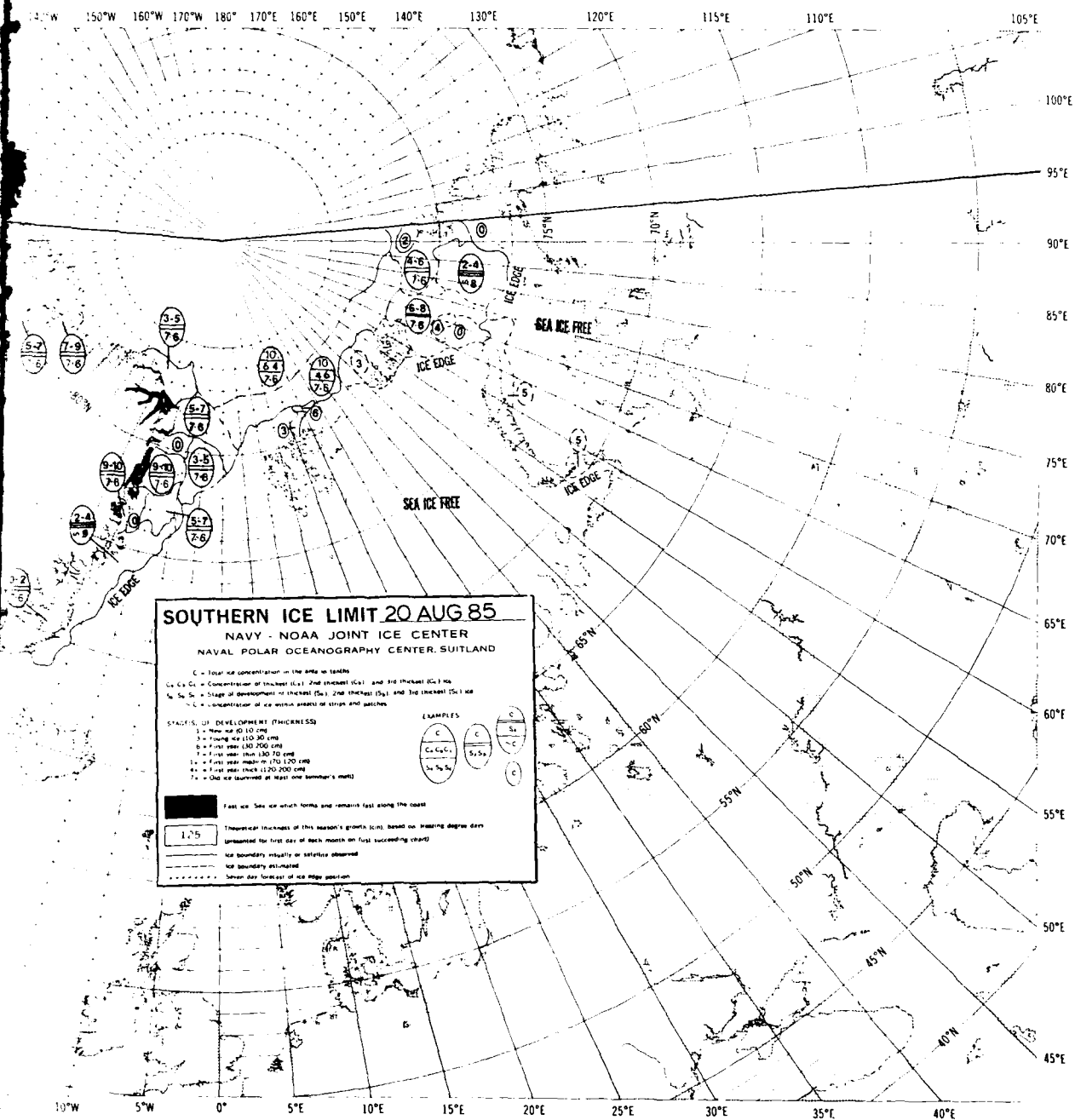


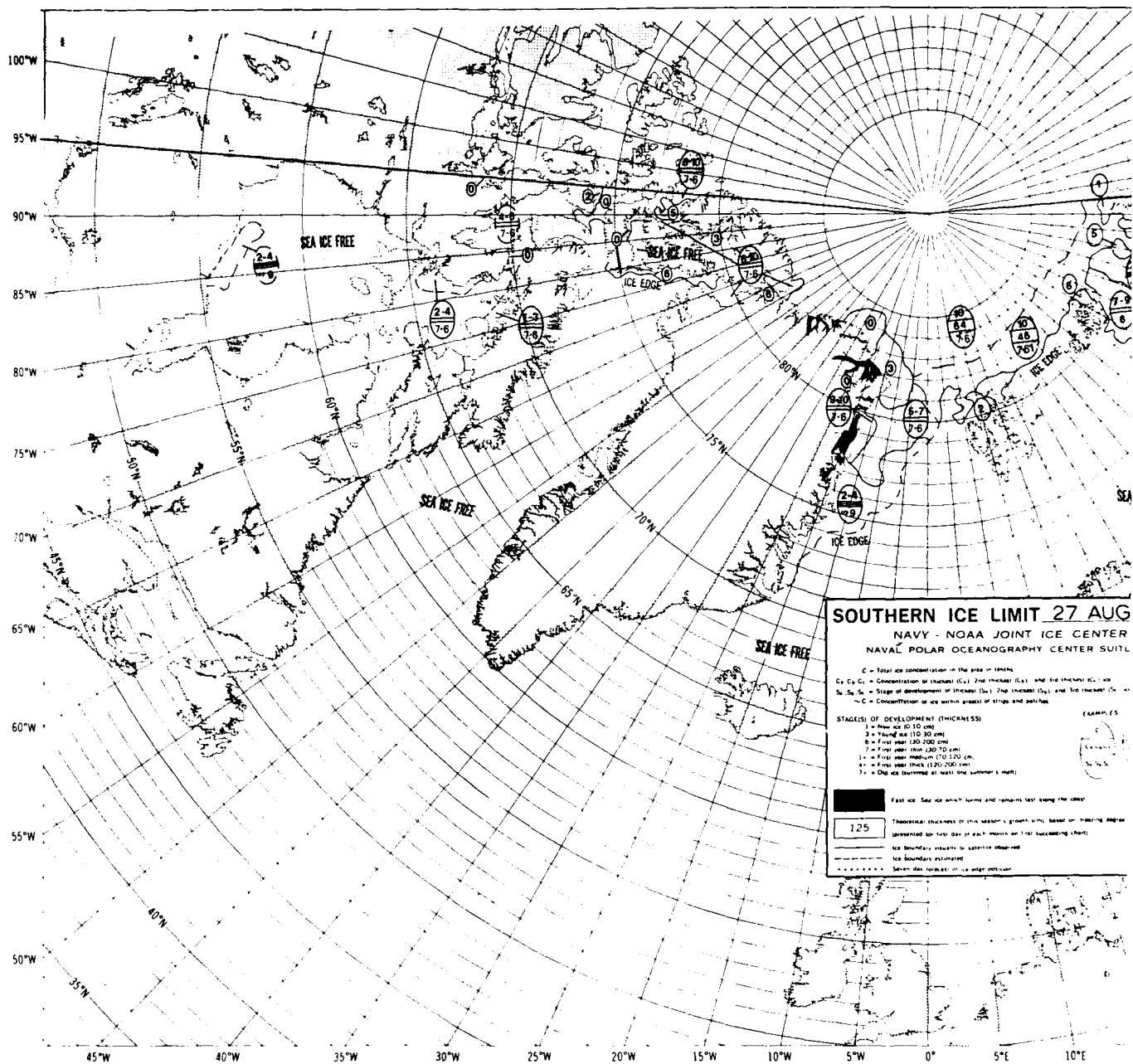












SOUTHERN ICE LIMIT 27 AUG 85

NAVY - NOAA JOINT ICE CENTER
NAVAL POLAR OCEANOGRAPHY CENTER SUITLAND

C = Total ice concentration in the area in tenths
C₁, C₂, C₃ = Concentration of thickness (C₁), 2nd thickness (C₂), and 3rd thickness (C₃) in tenths
S₁, S₂, S₃ = Stage or development of thickness (S₁), 2nd thickness (S₂), and 3rd thickness (S₃) in tenths
C = Composite of any other stages or stages and thickness

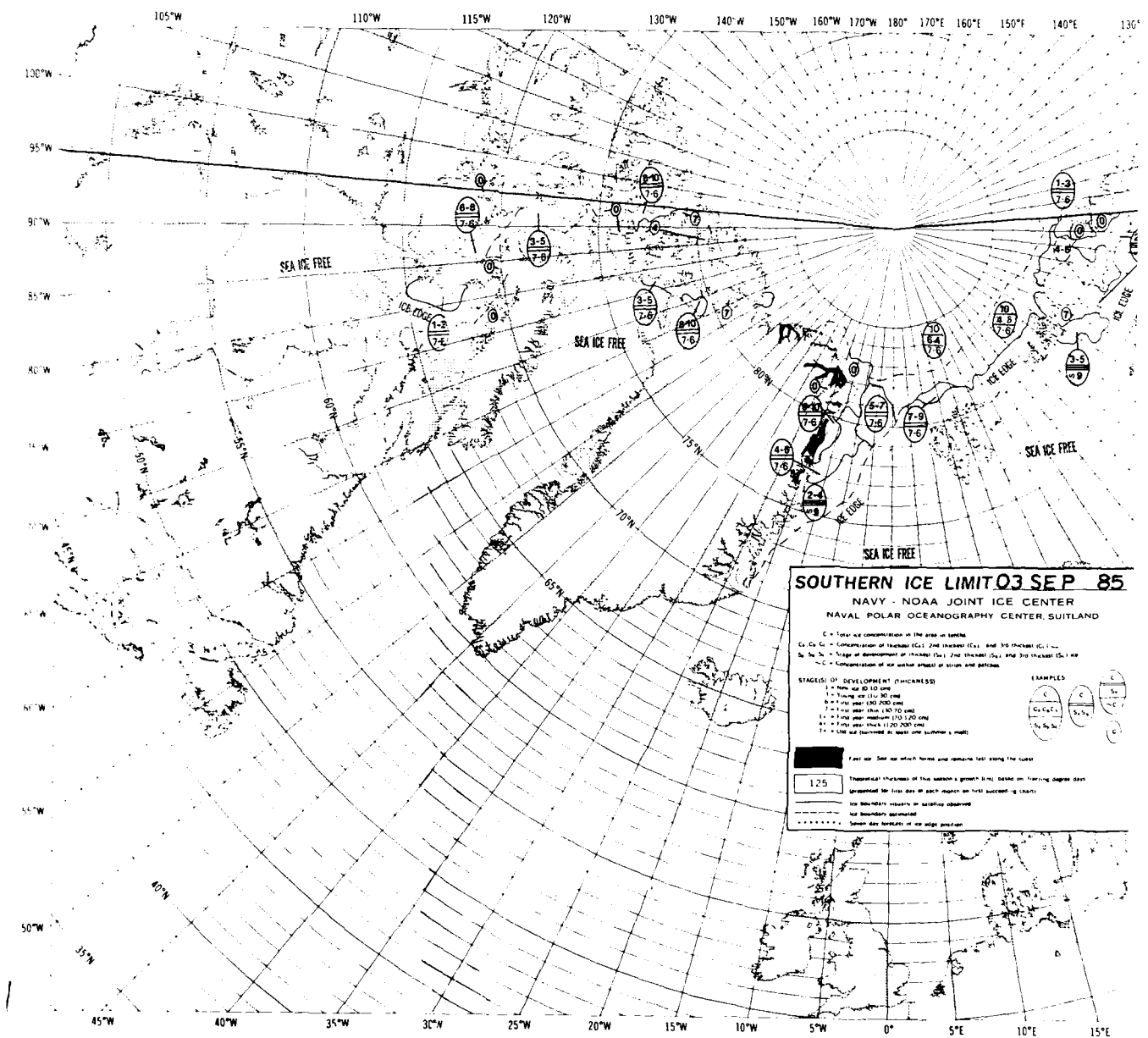
STAGES OF DEVELOPMENT (THICKNESS)

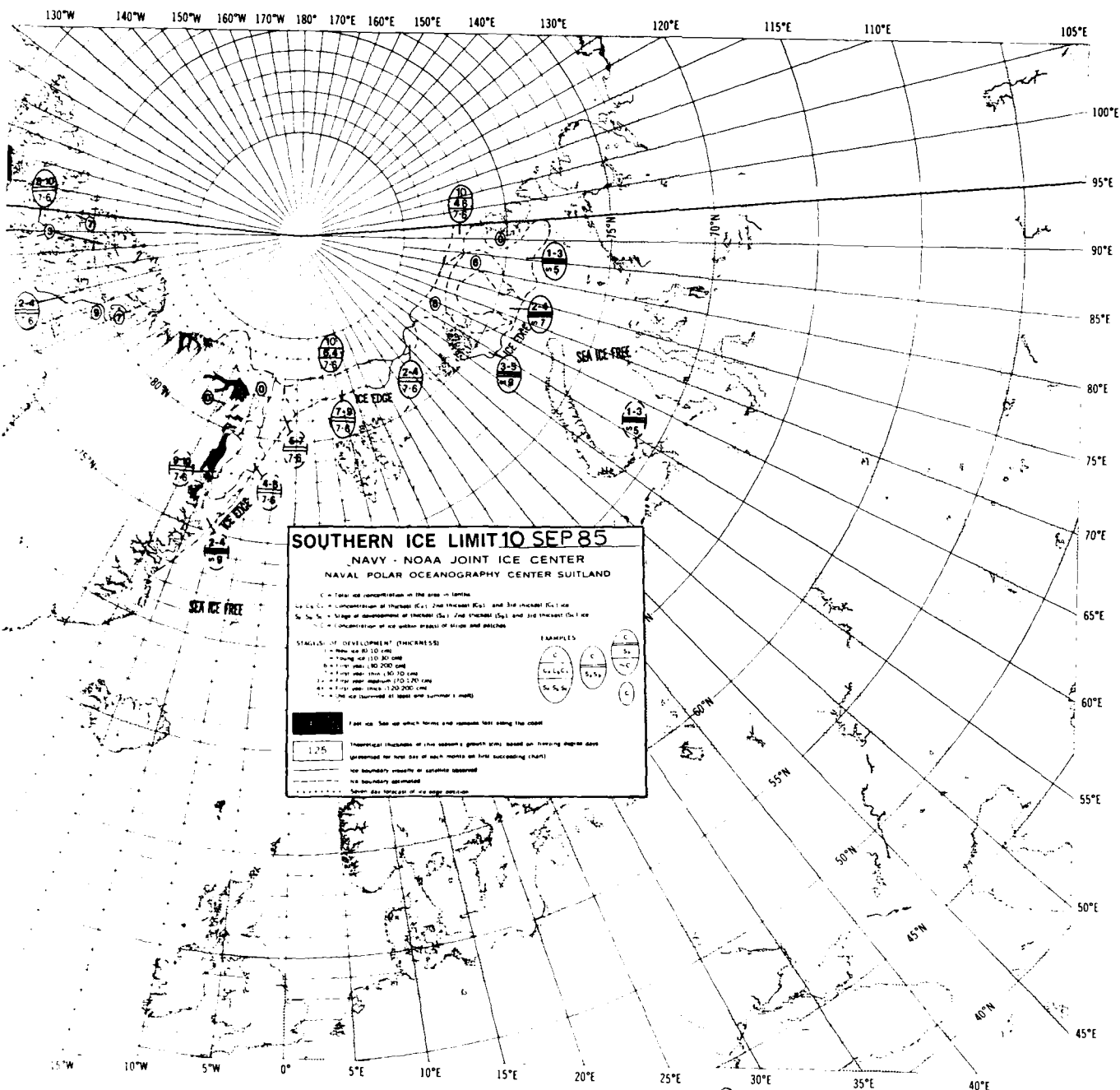
- 1 = New ice (0-10 cm)
- 2 = Young ice (10-30 cm)
- 3 = First year (30-200 cm)
- 4 = First year (over 200 cm)
- 5 = First year (over 100-150 cm)
- 6 = First year (over 150-200 cm)
- 7 = First year (over 200-250 cm)
- 8 = First year (over 250-300 cm)
- 9 = Old ice (developed at least one summer's melt)

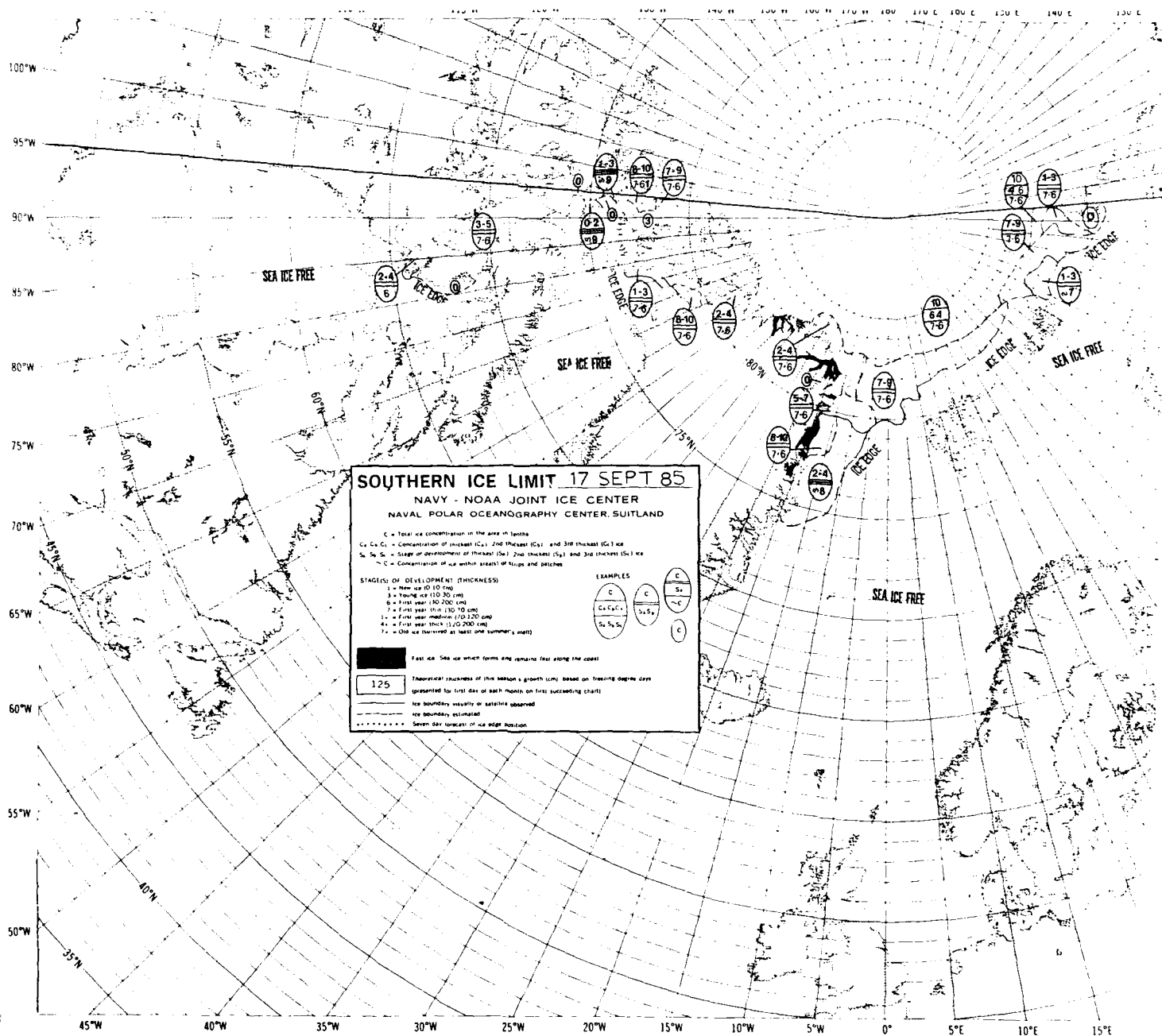
EXAMPLES

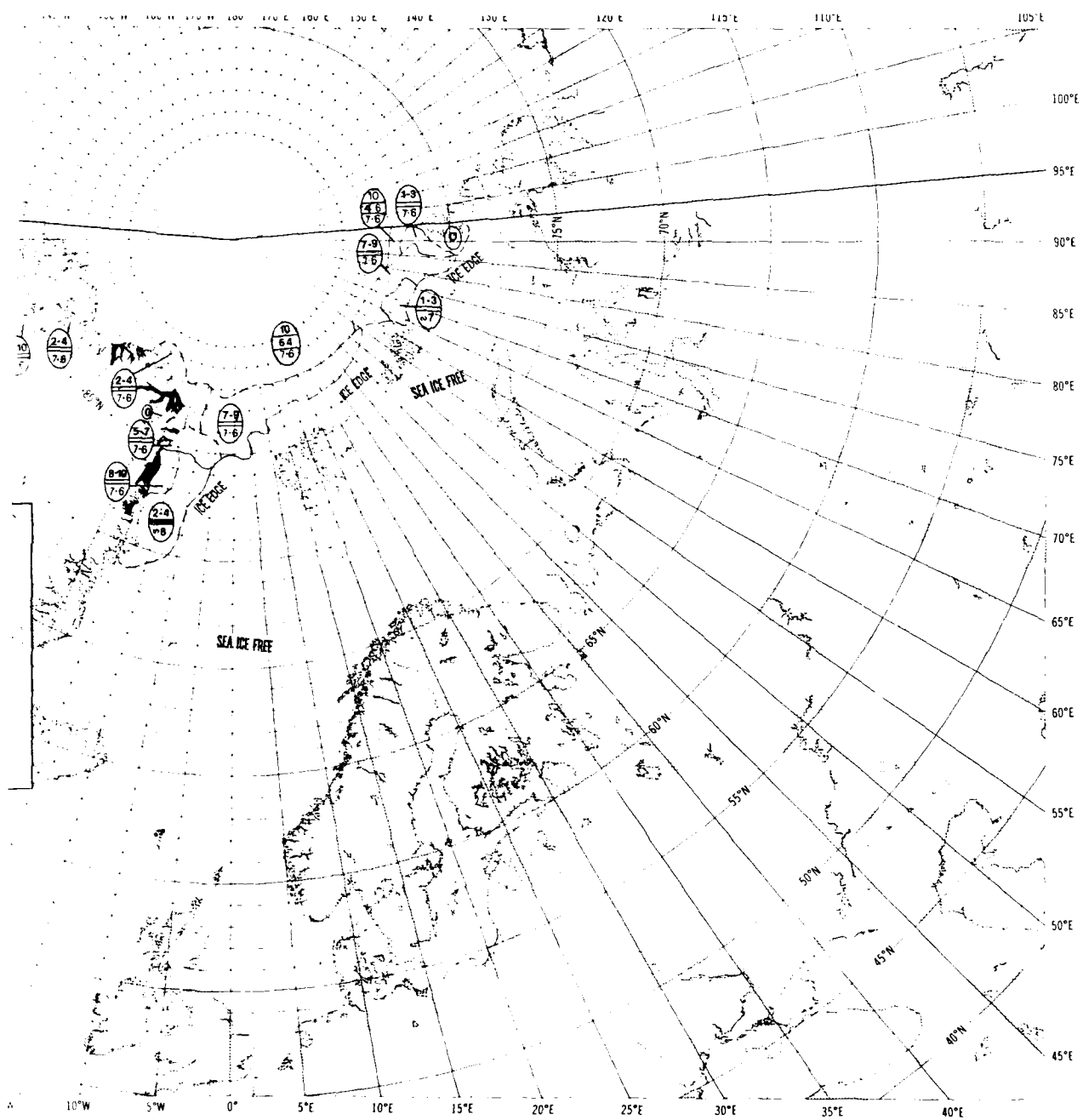


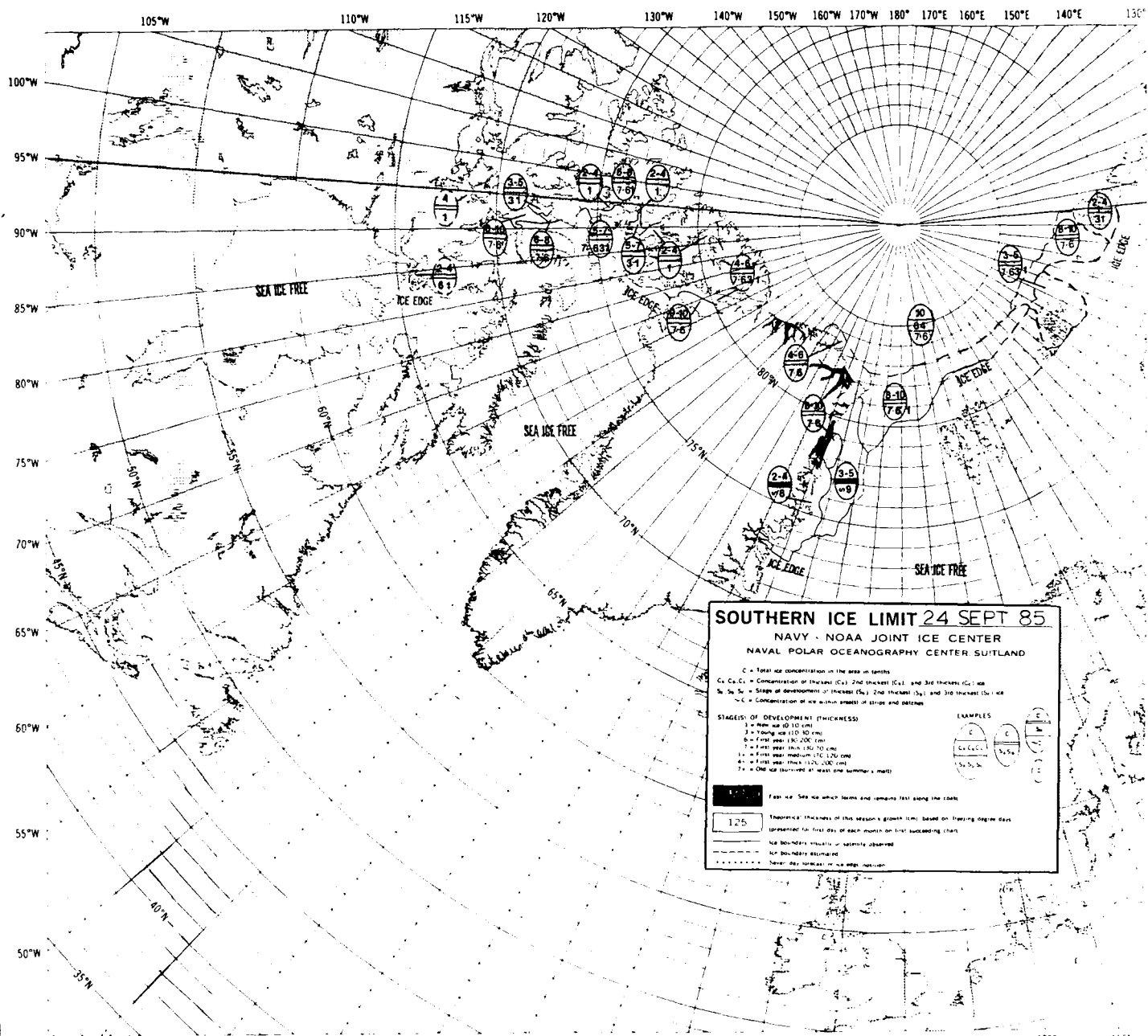
- 125 = Ice age. See age when formed and compare later along the coast
- 125 = Thickness (thickness of the ice in growth (cm) based on freezing degree days (computed for two days of each month on first succeeding chart)
- = Ice boundary, visible or satellite observed
- = Approximate boundary, visible or satellite observed
- = Approximate boundary, visible or satellite observed

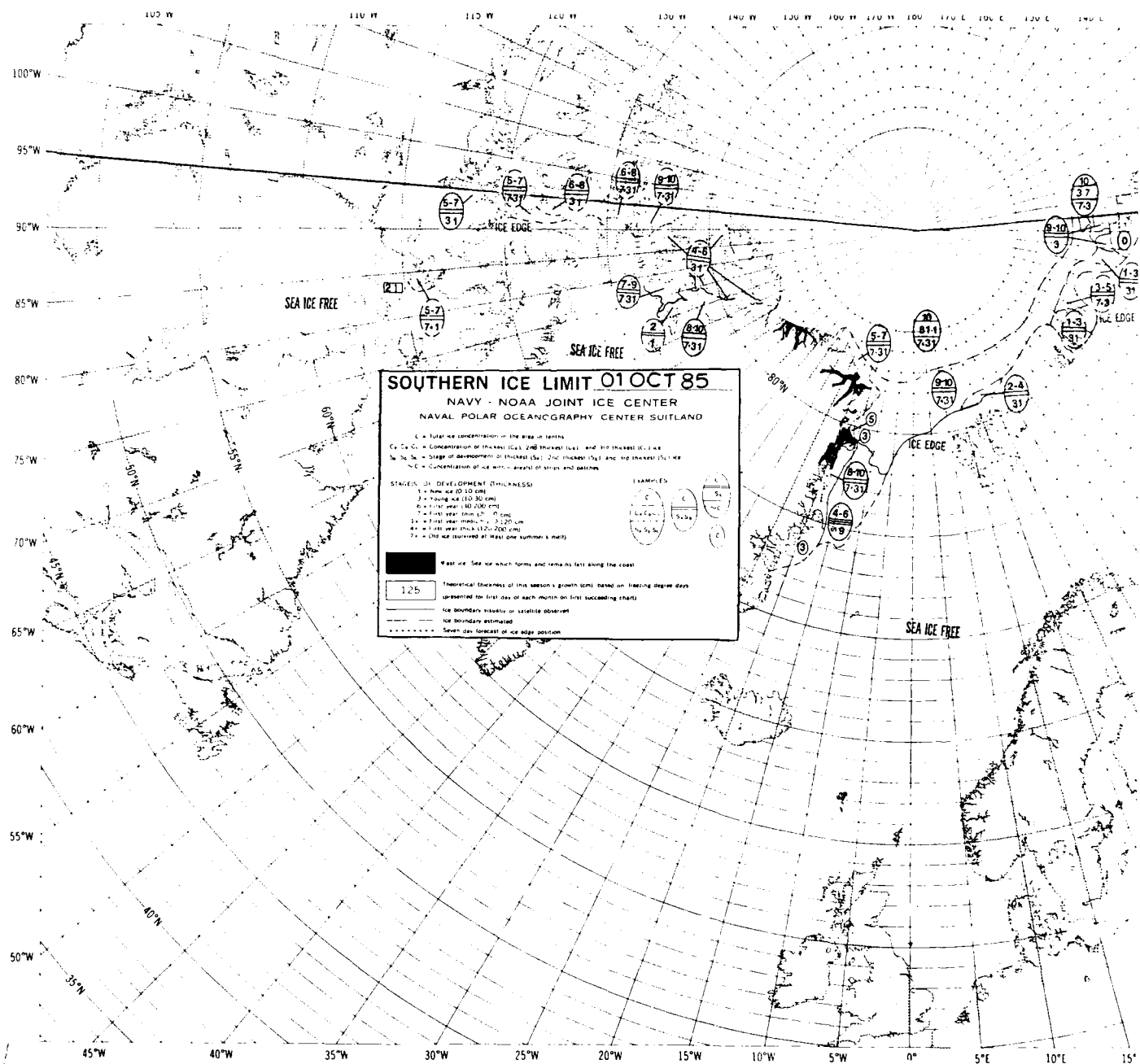


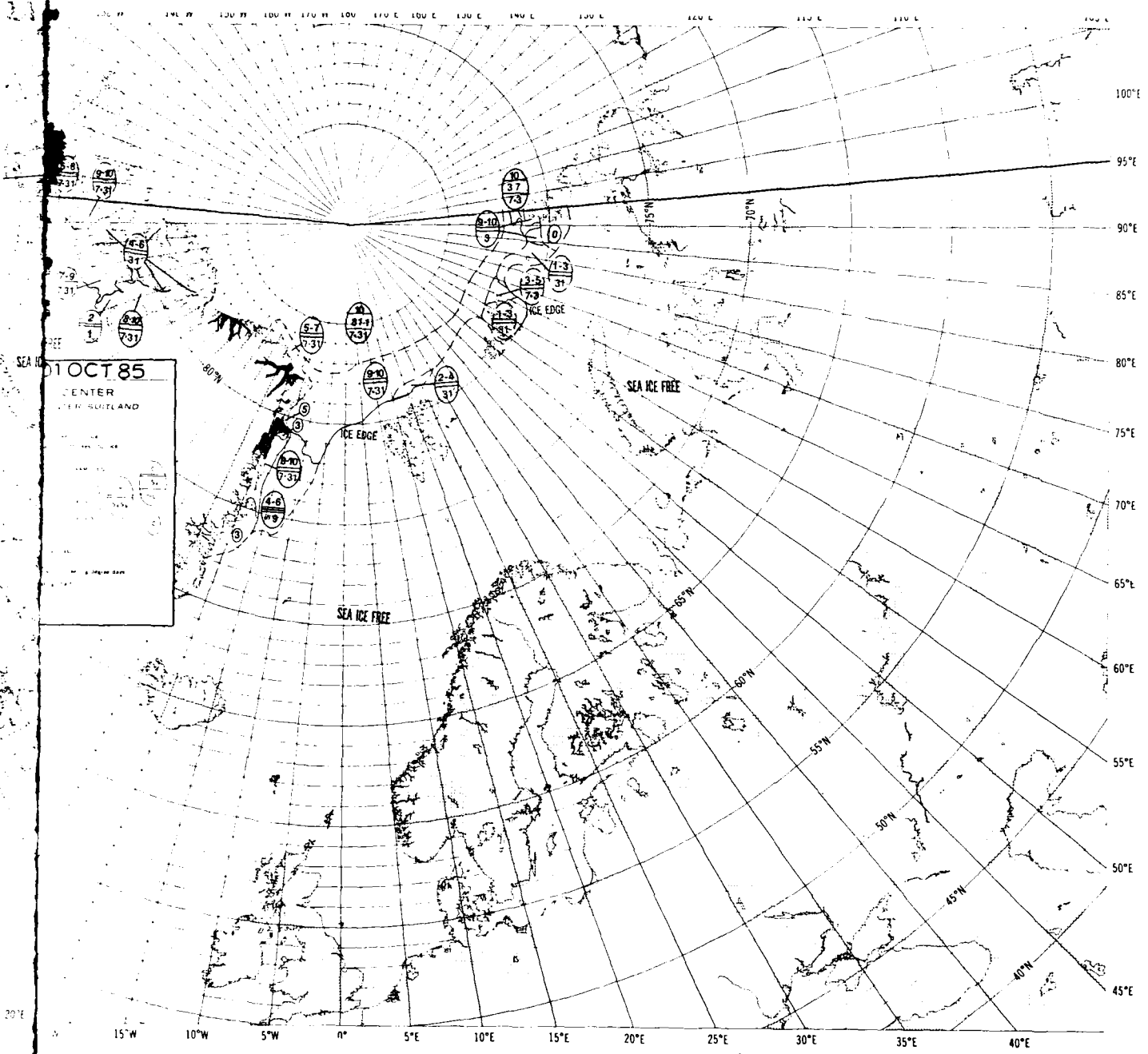






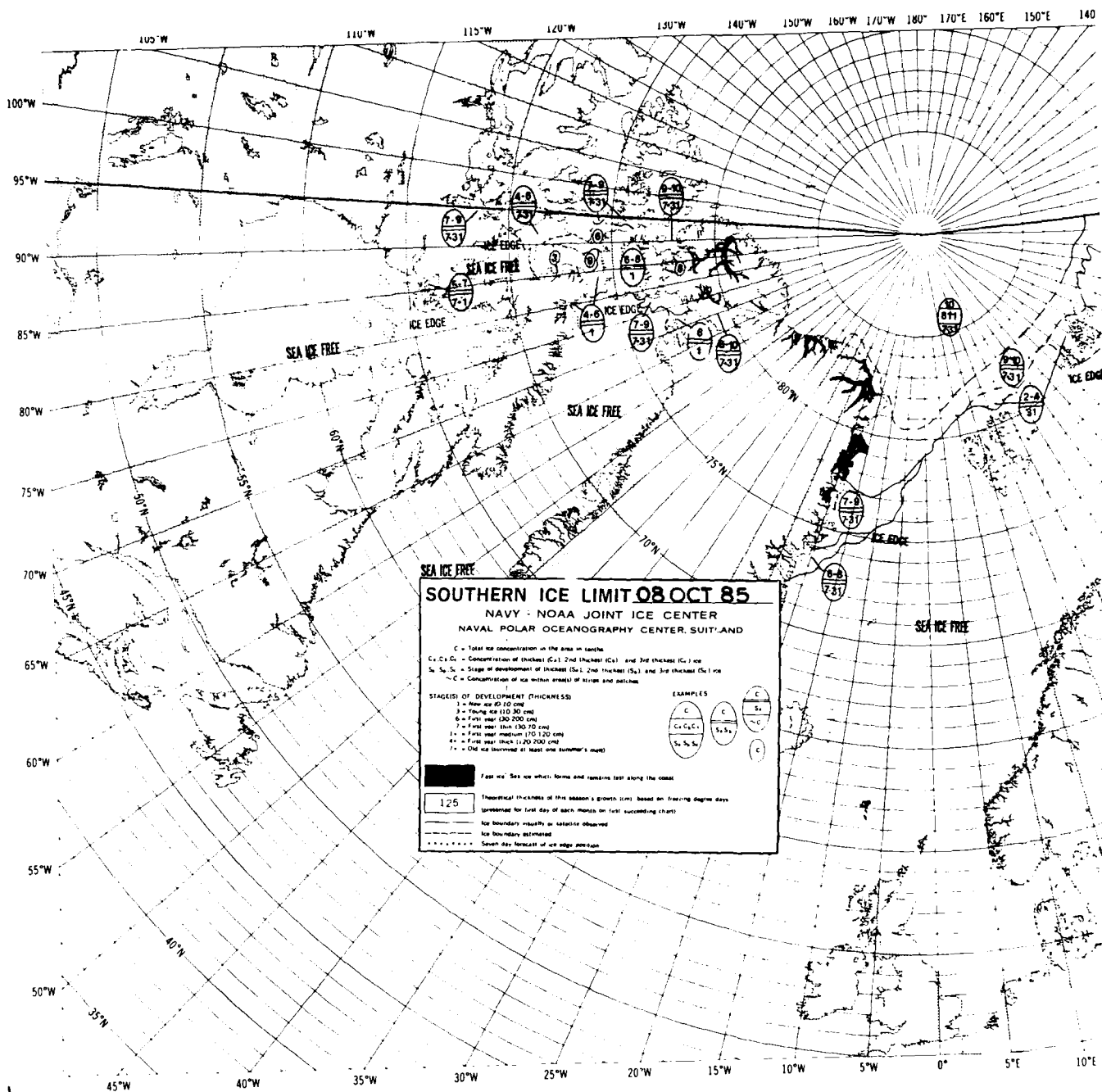


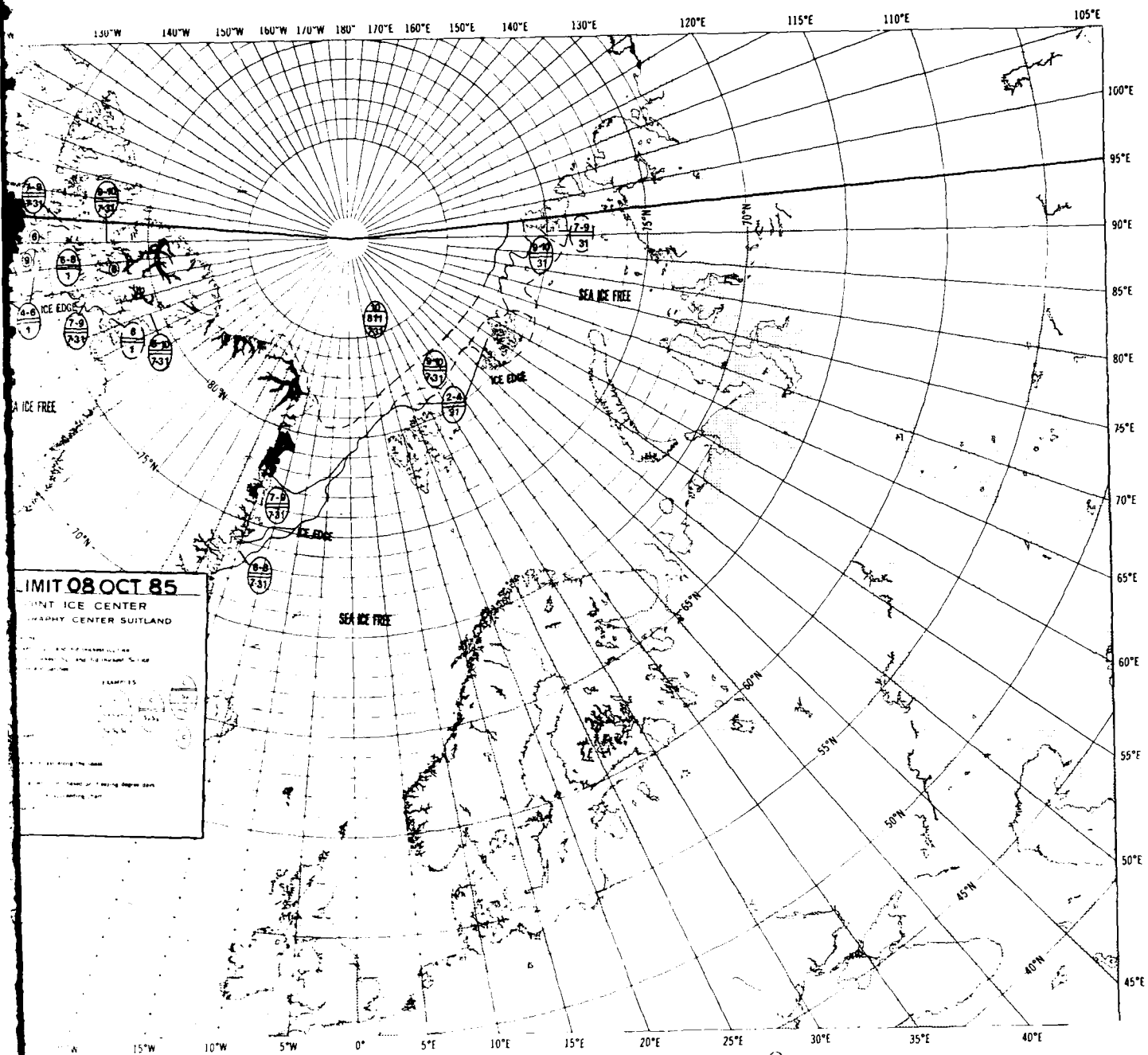


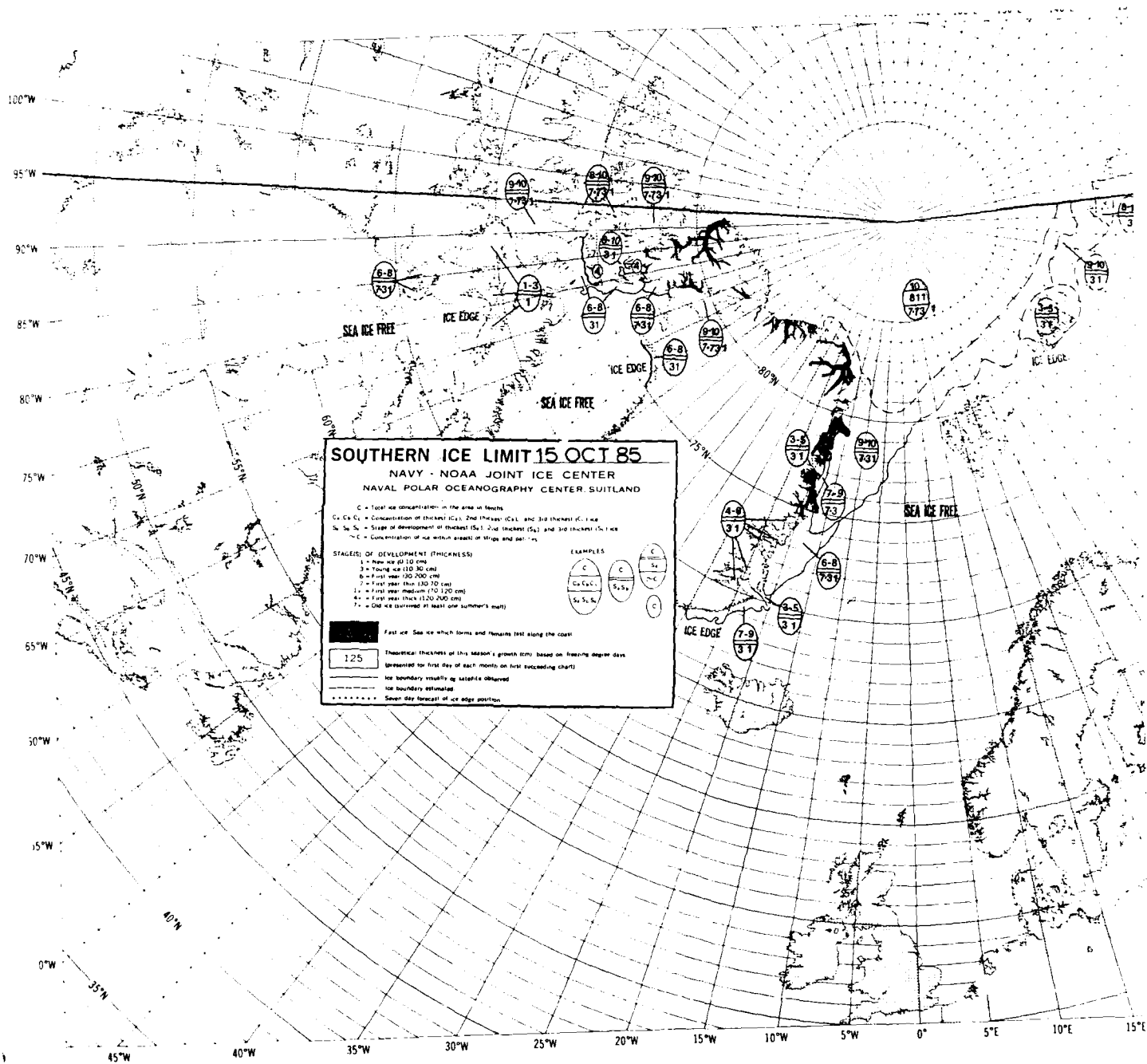


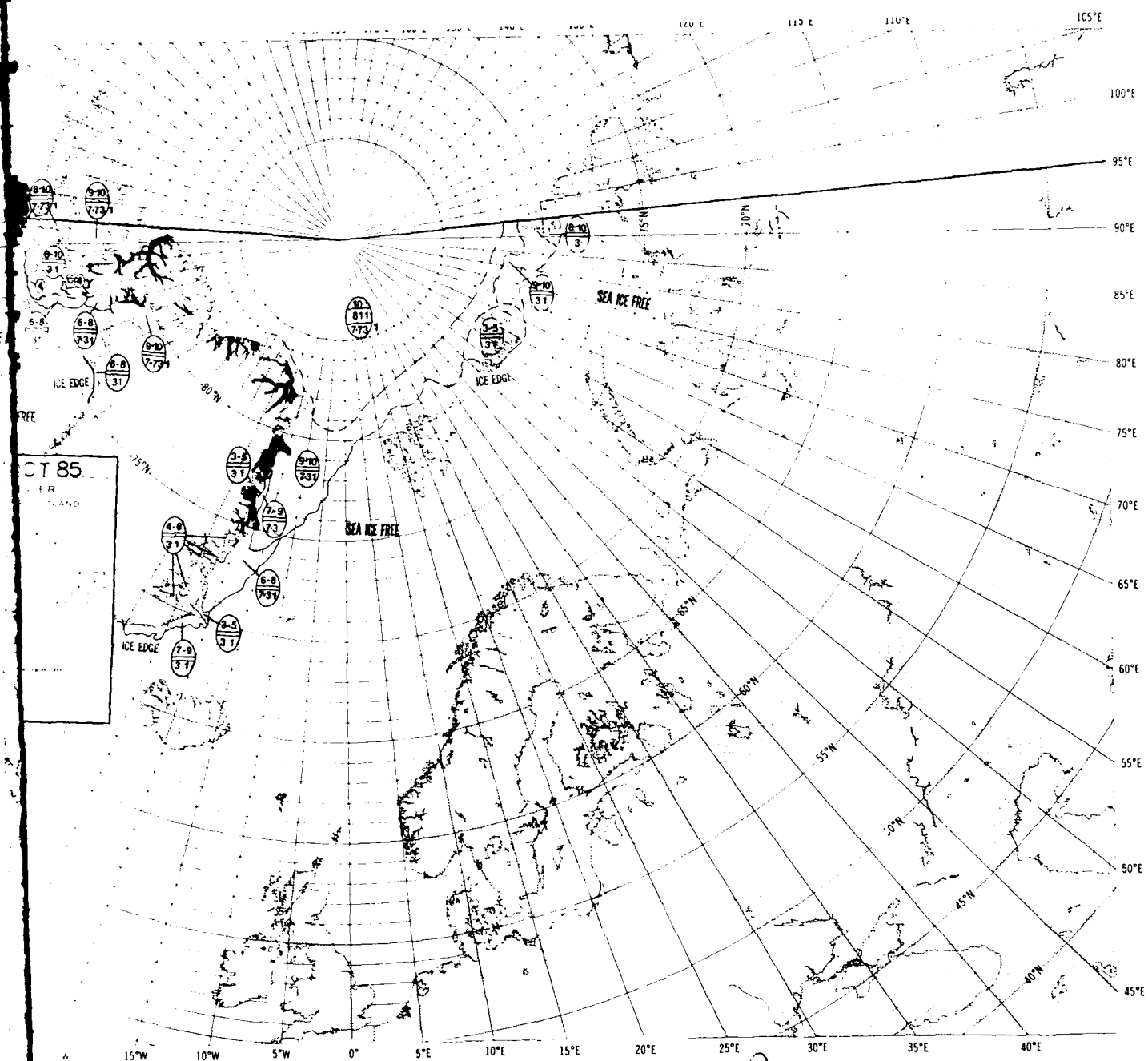
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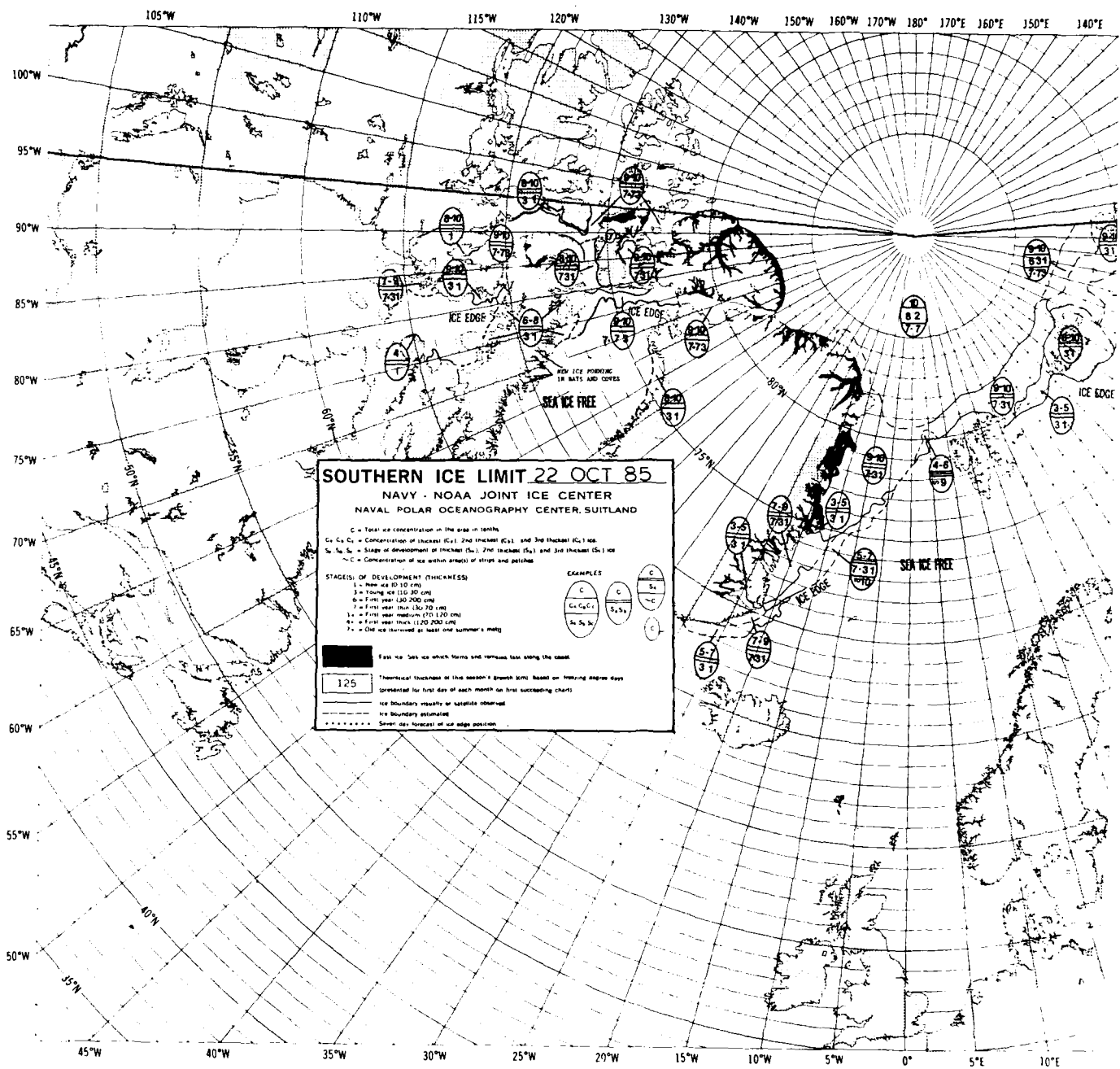
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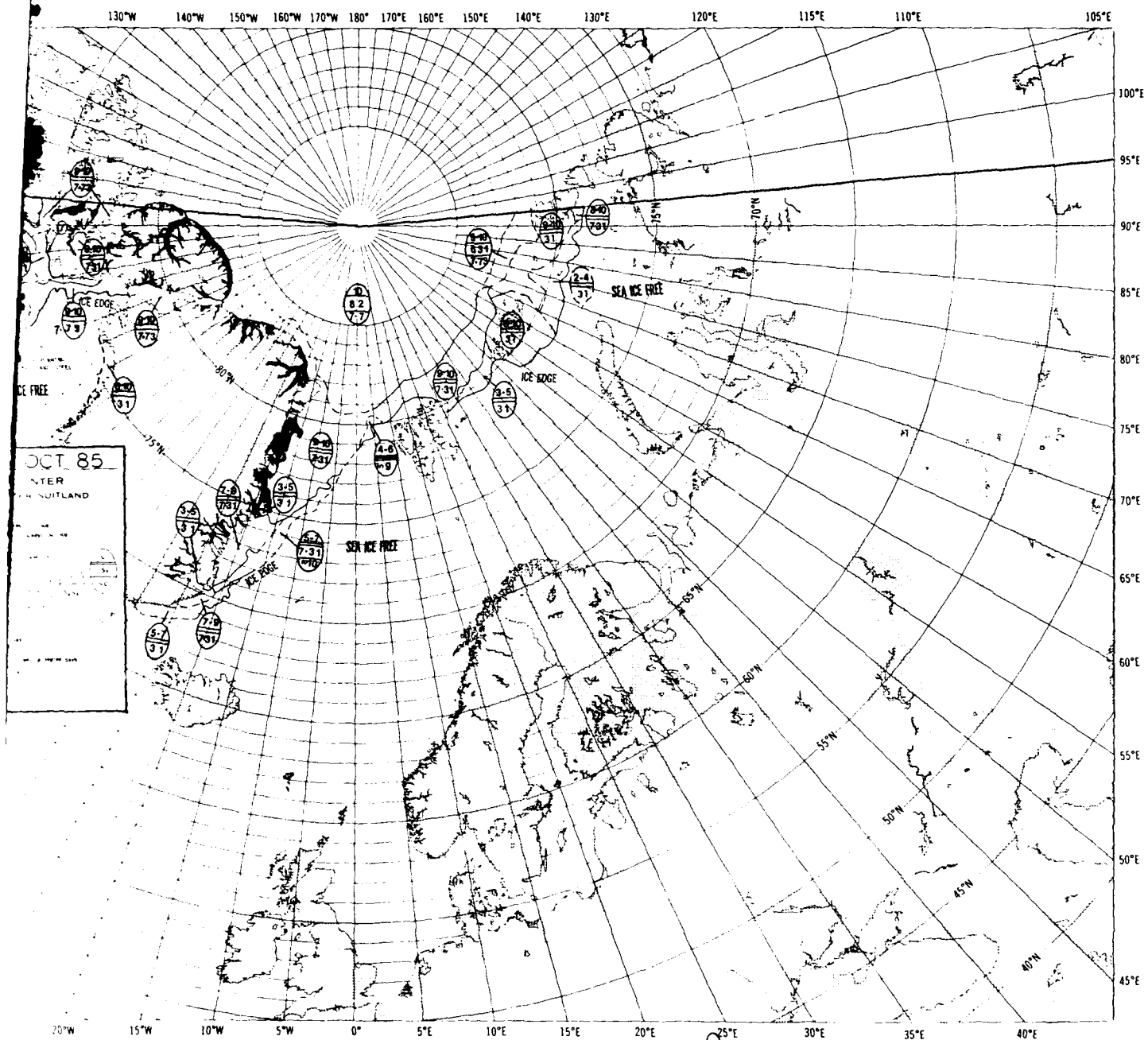




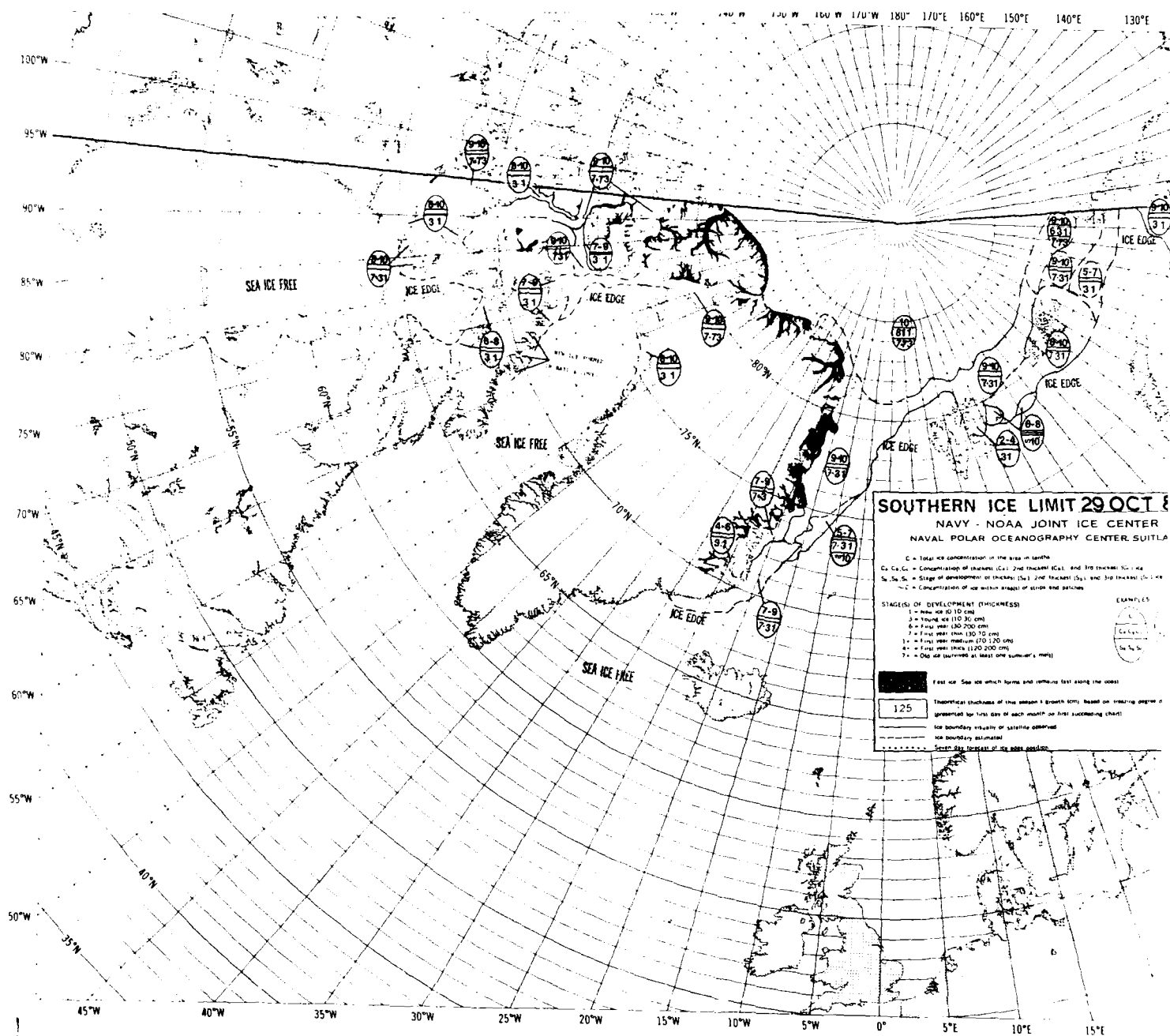


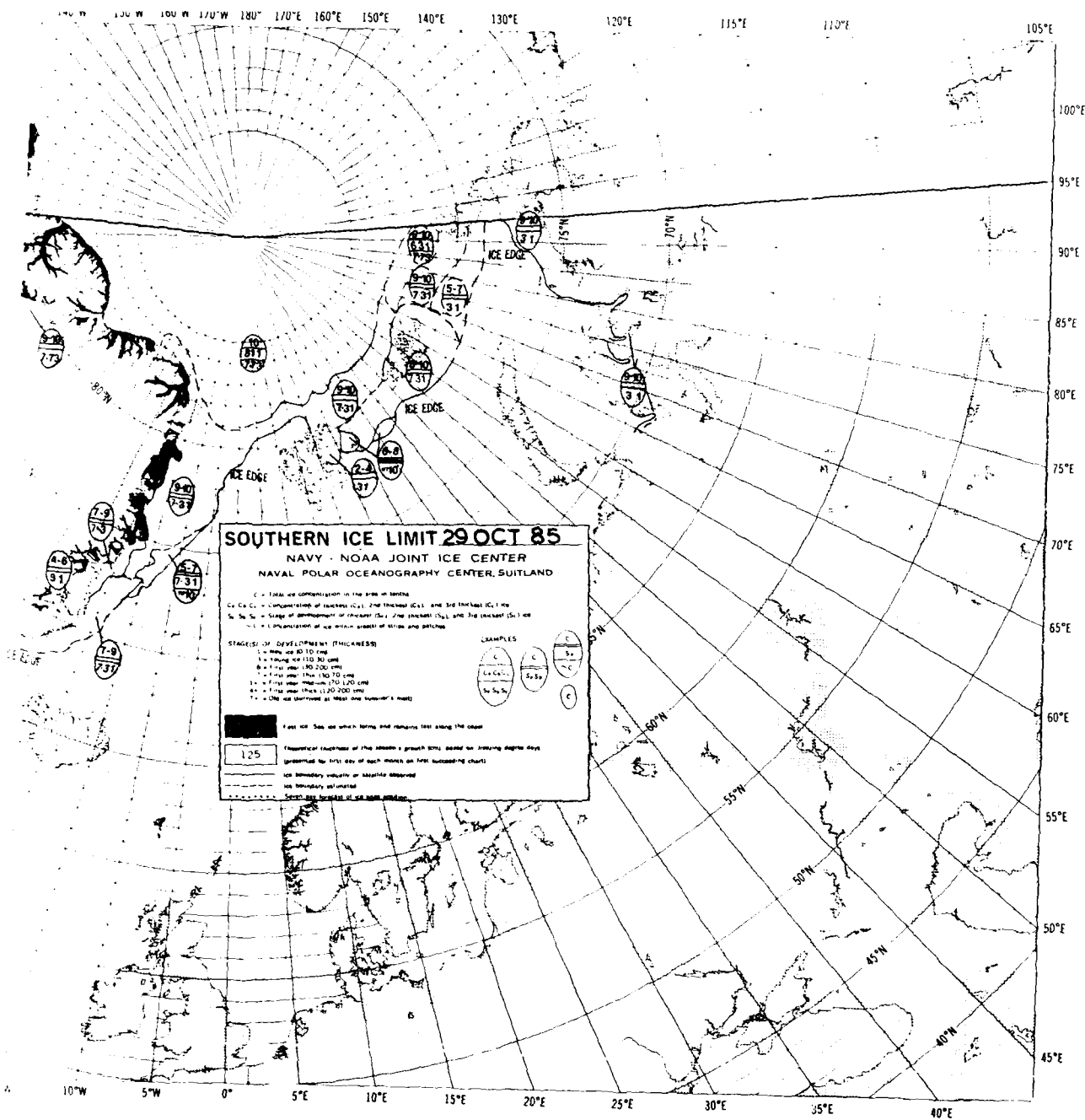




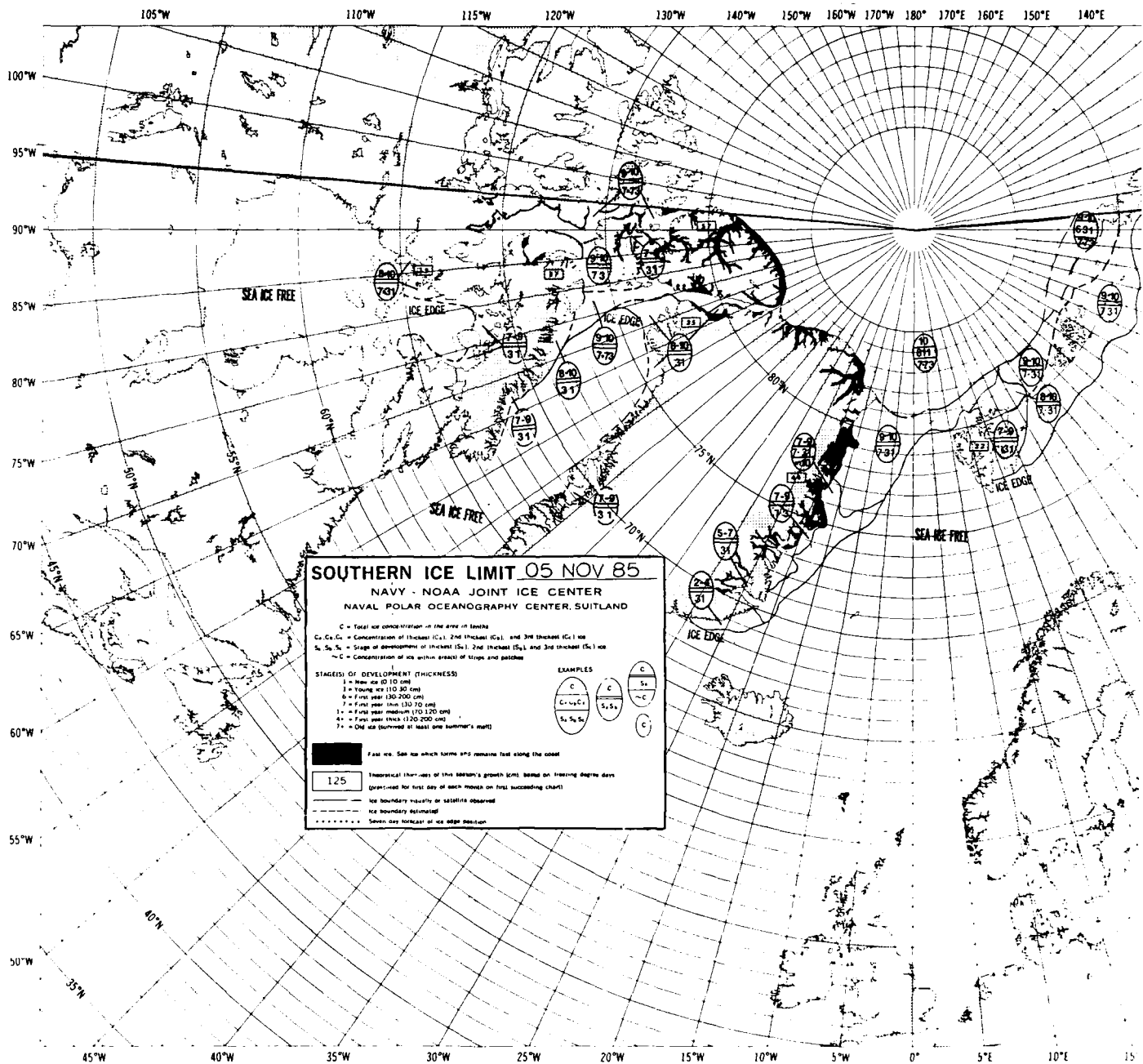


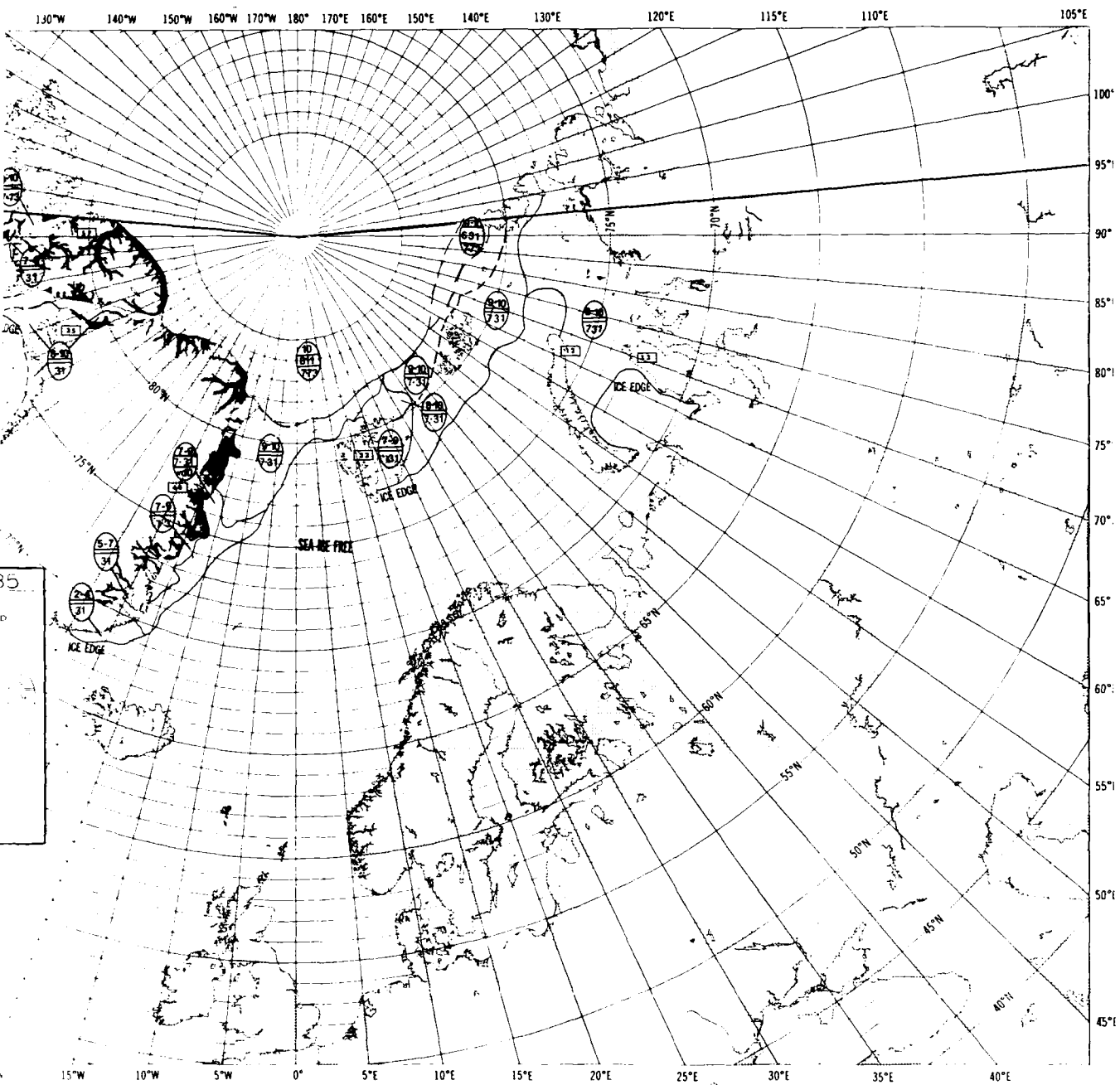
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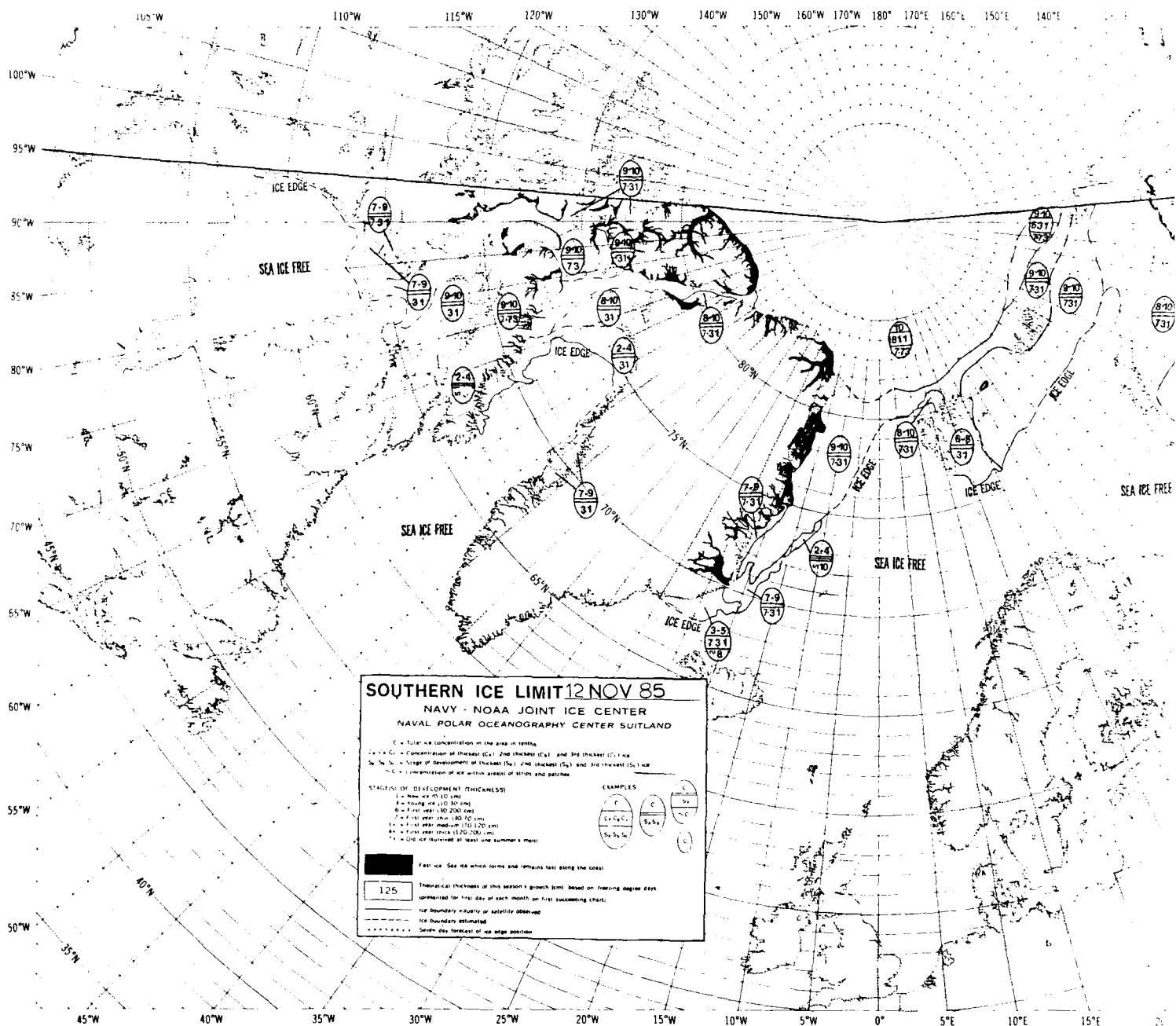


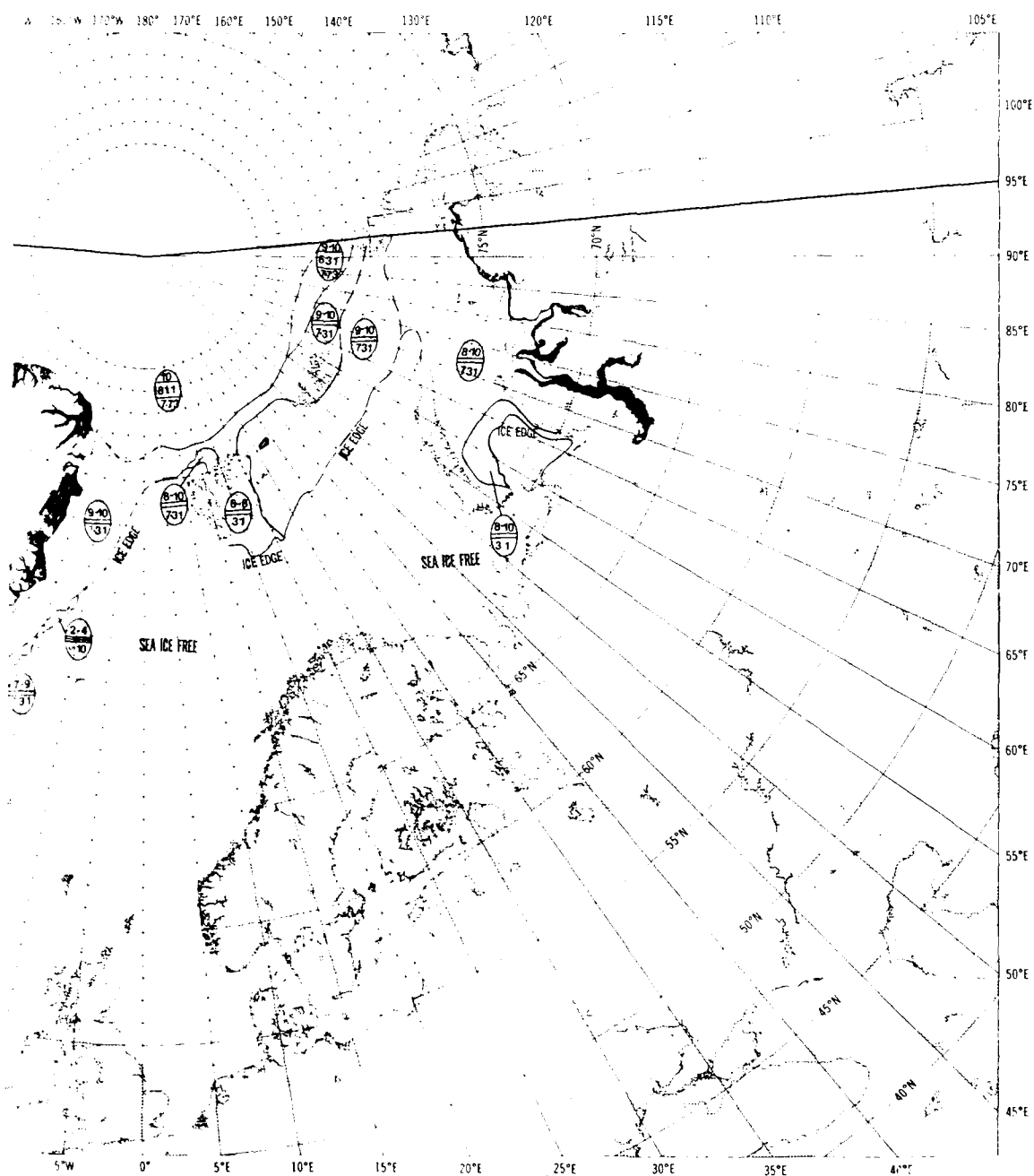


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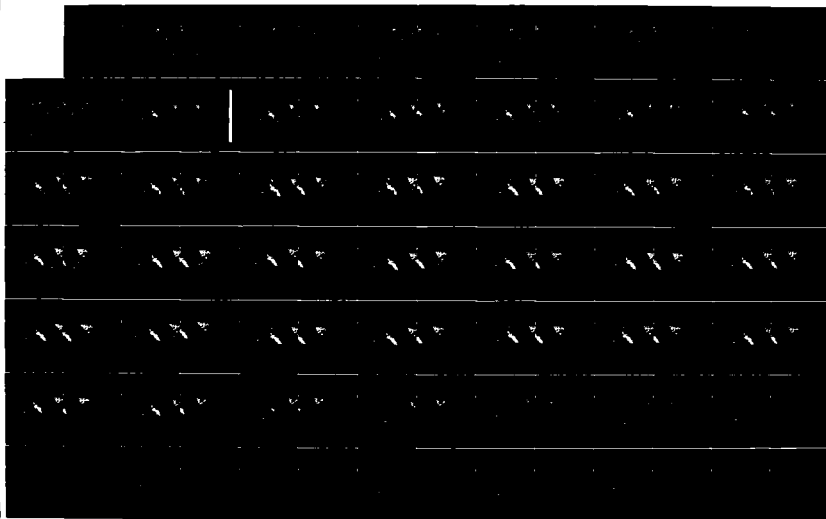


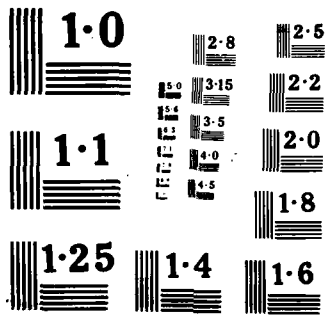
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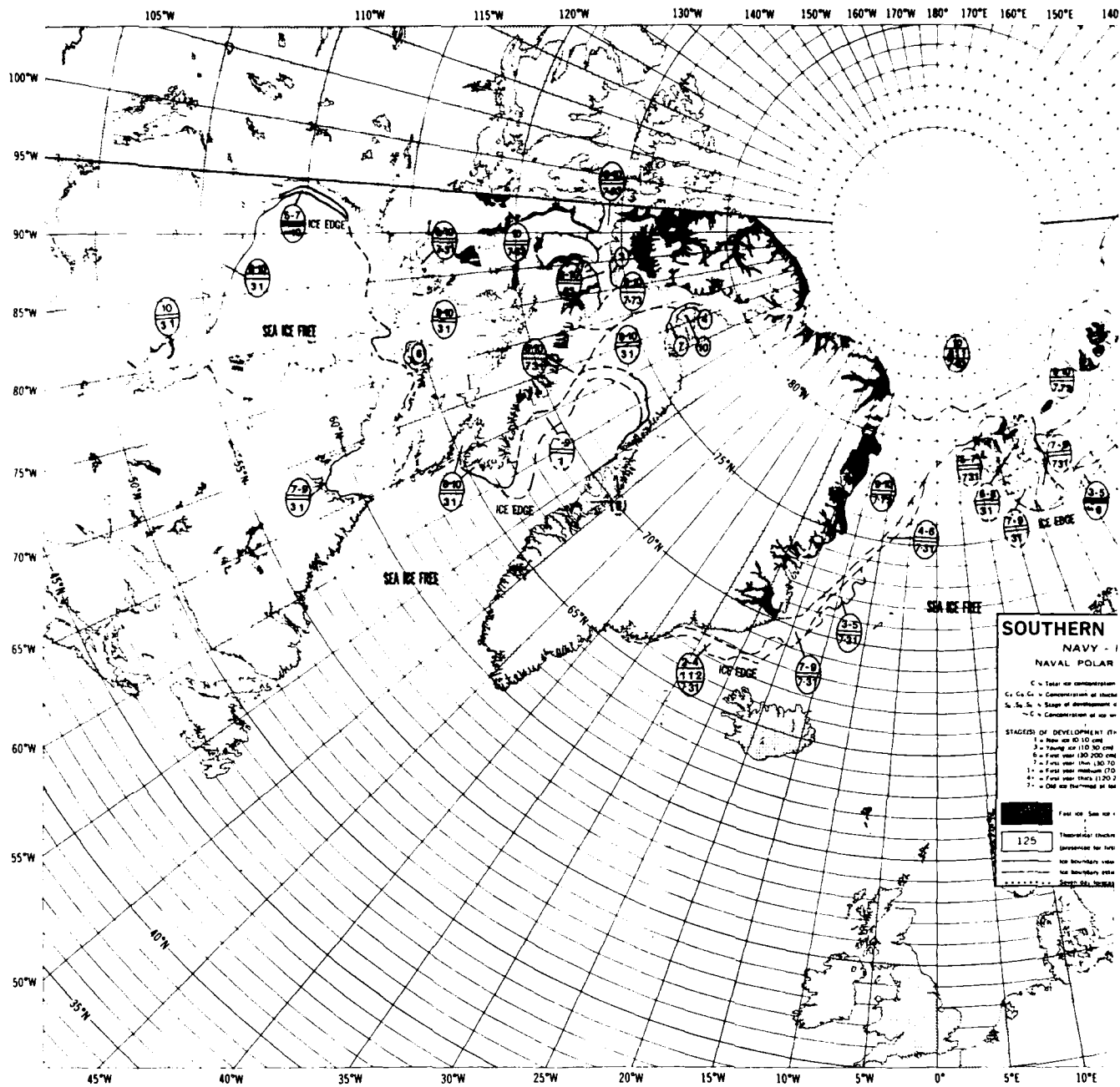
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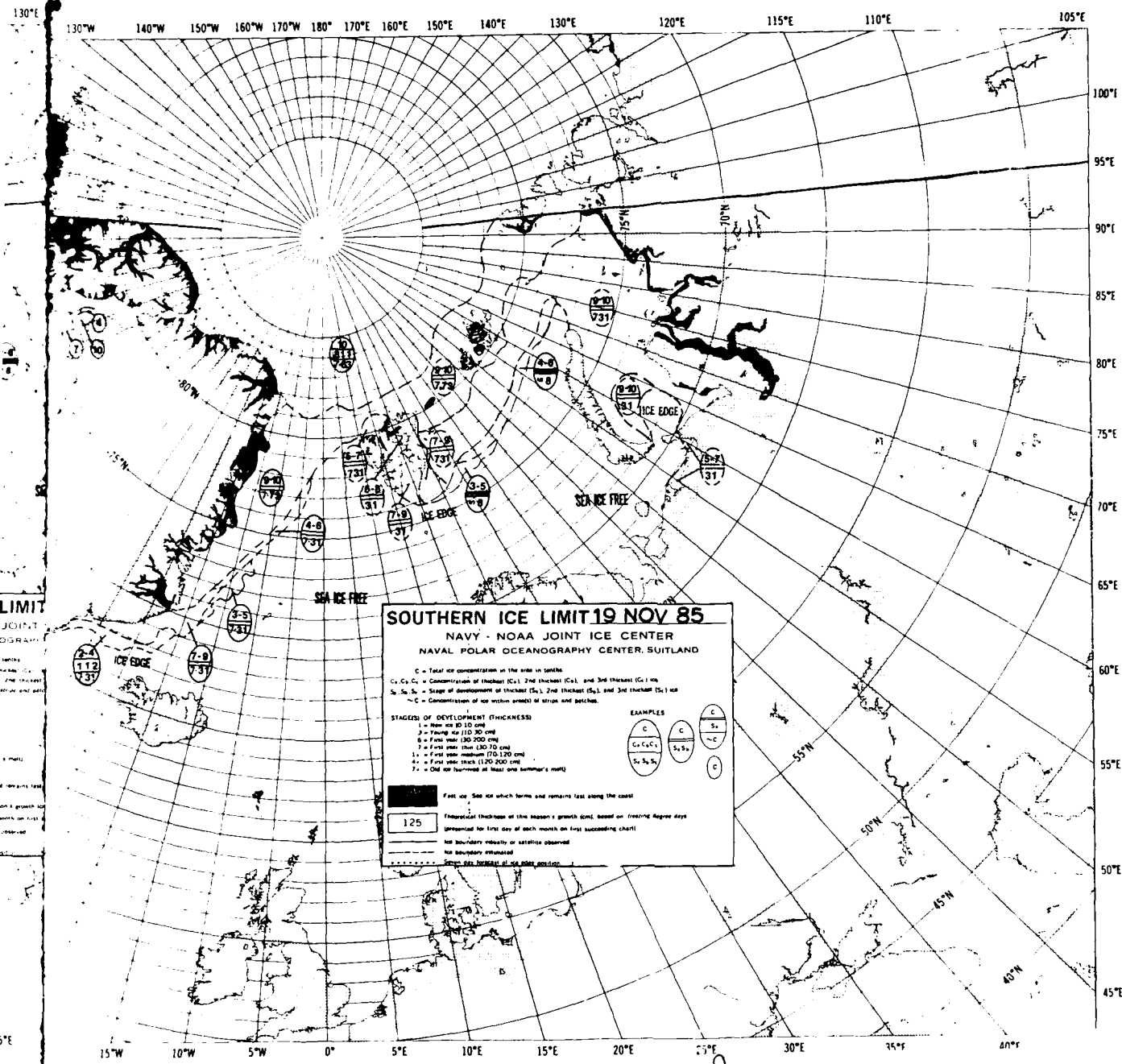
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SOUTHERN ICE LIMIT 19 NOV 85
 NAVY - NOAA JOINT ICE CENTER
 NAVAL POLAR OCEANOGRAPHY CENTER, SUITLAND

C = Total ice concentration in the area in tenths
 C₁, C₂, C₃ = Concentration of thickest (C₁), 2nd thickest (C₂), and 3rd thickest (C₃) ice
 S₁, S₂, S₃ = Stage of development of thickest (S₁), 2nd thickest (S₂), and 3rd thickest (S₃) ice
 ~C = Concentration of ice within period of strip and patches

STAGES OF DEVELOPMENT (THICKNESS)

- 1 = New ice (10-30 cm)
- 2 = Young ice (30-100 cm)
- 3 = First year (100-200 cm)
- 4 = First year (thin) (200-700 cm)
- 5 = First year medium (700-1200 cm)
- 6 = First year thick (1200-2000 cm)
- 7 = Old ice (formed at least one summer's melt)

EXAMPLES

C	C ₁	C ₂	C ₃
S ₁	S ₂	S ₃	

Fast ice: Sea ice which forms and remains fast along the coast

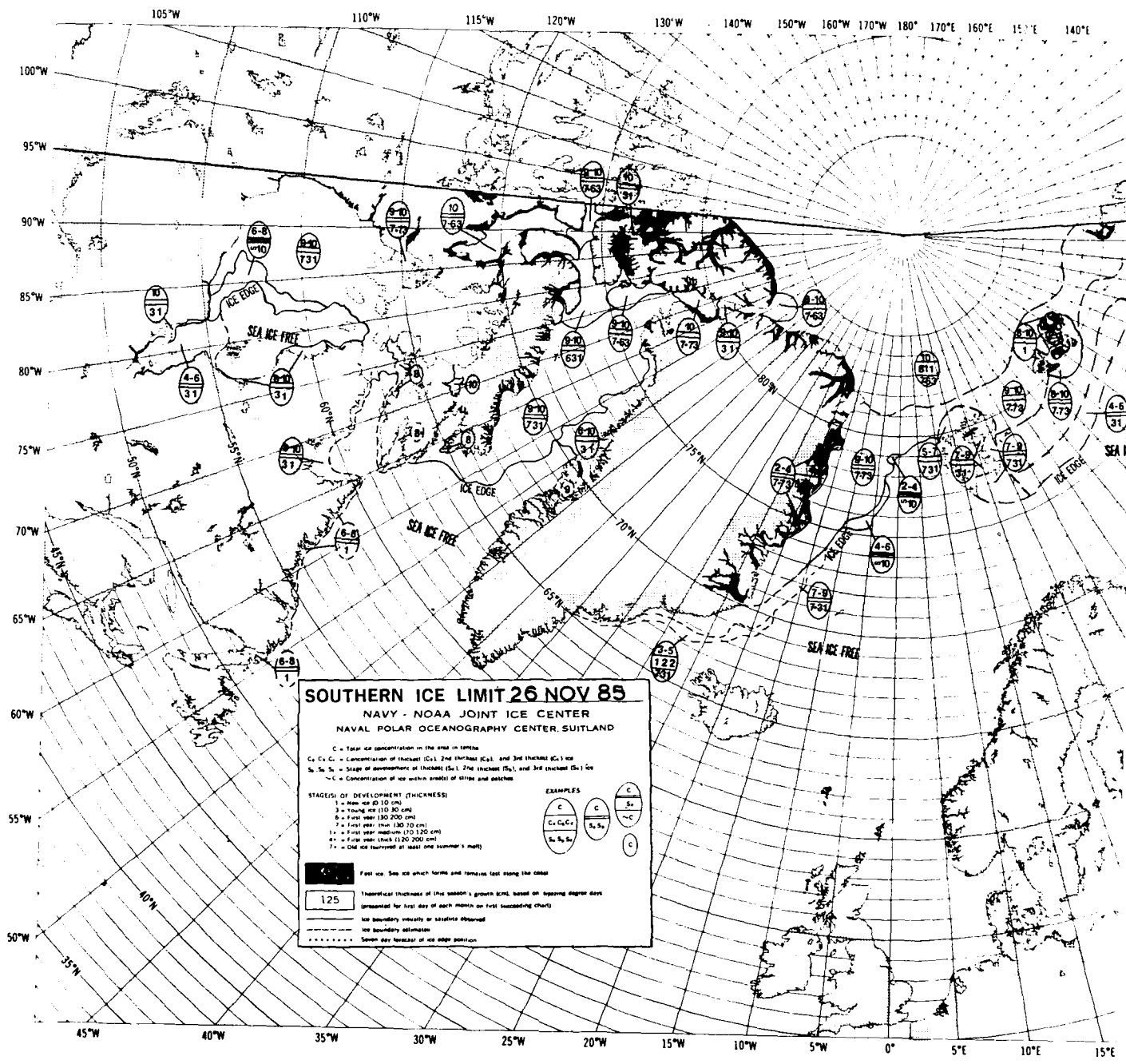
125: Thickness of this season's growth (cm), based on freezing degree days (averaged for first day of each month on first succeeding chart)

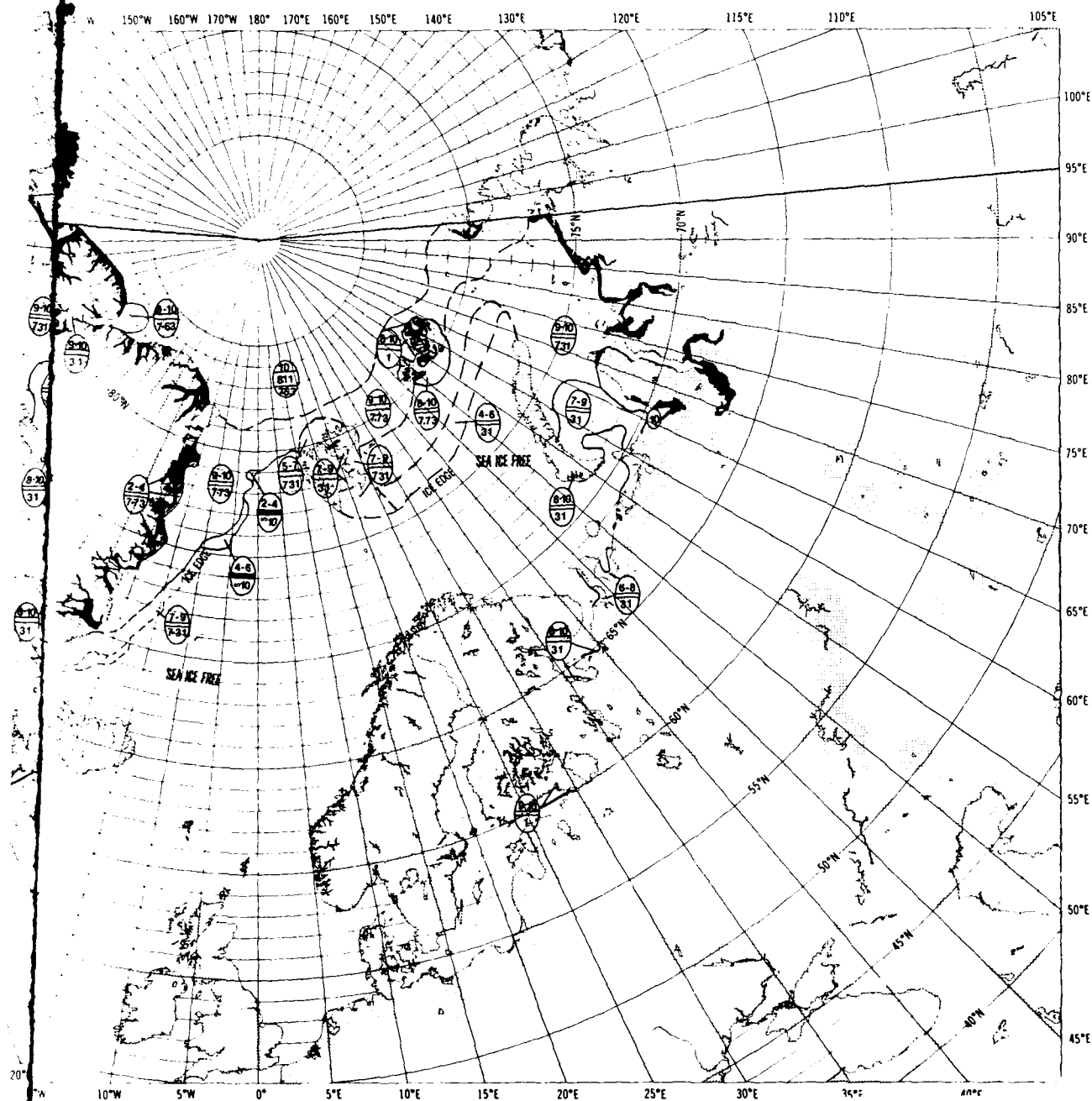
---: Ice boundaries actually or satellite observed

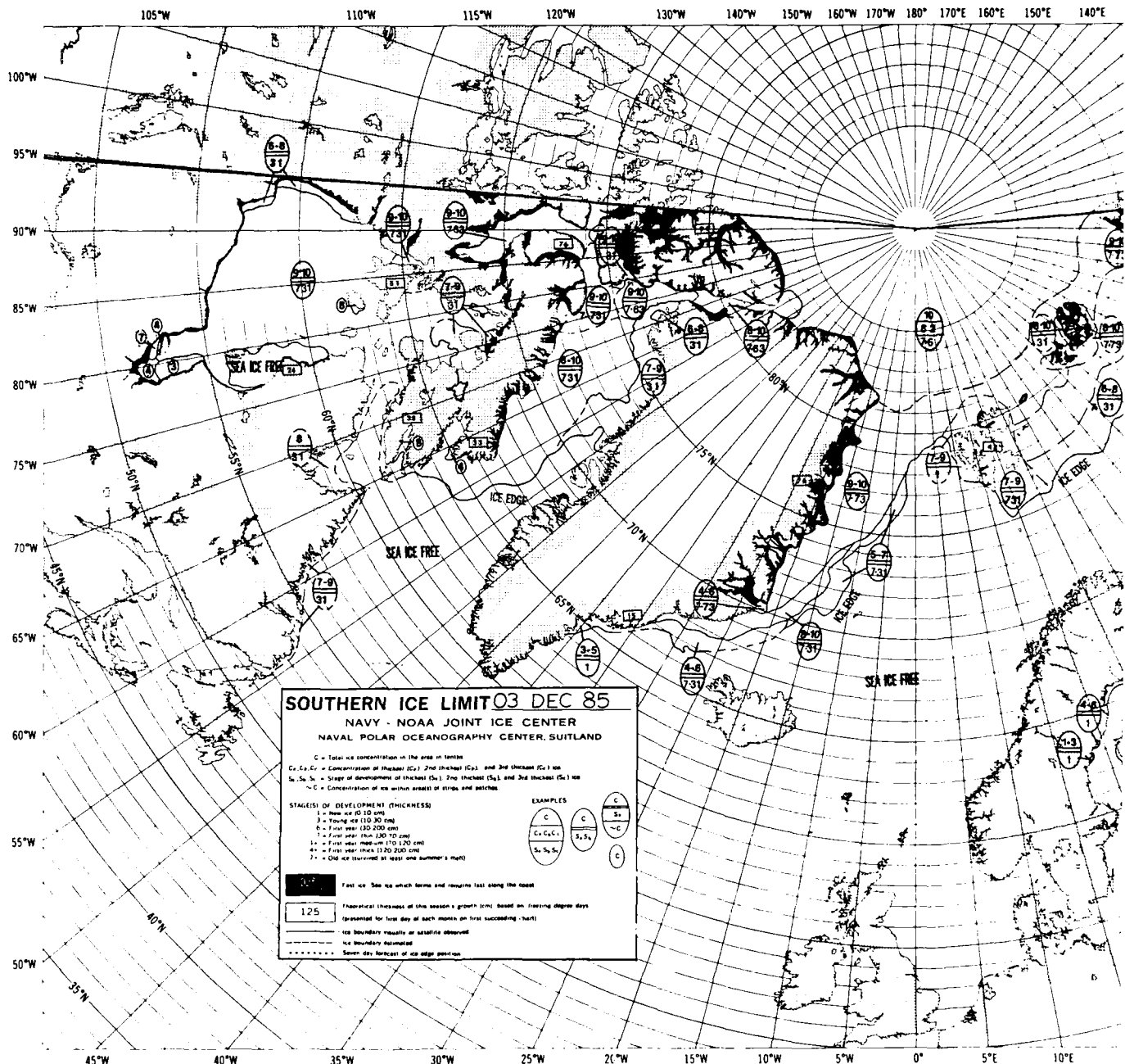
.....: Ice boundaries estimated

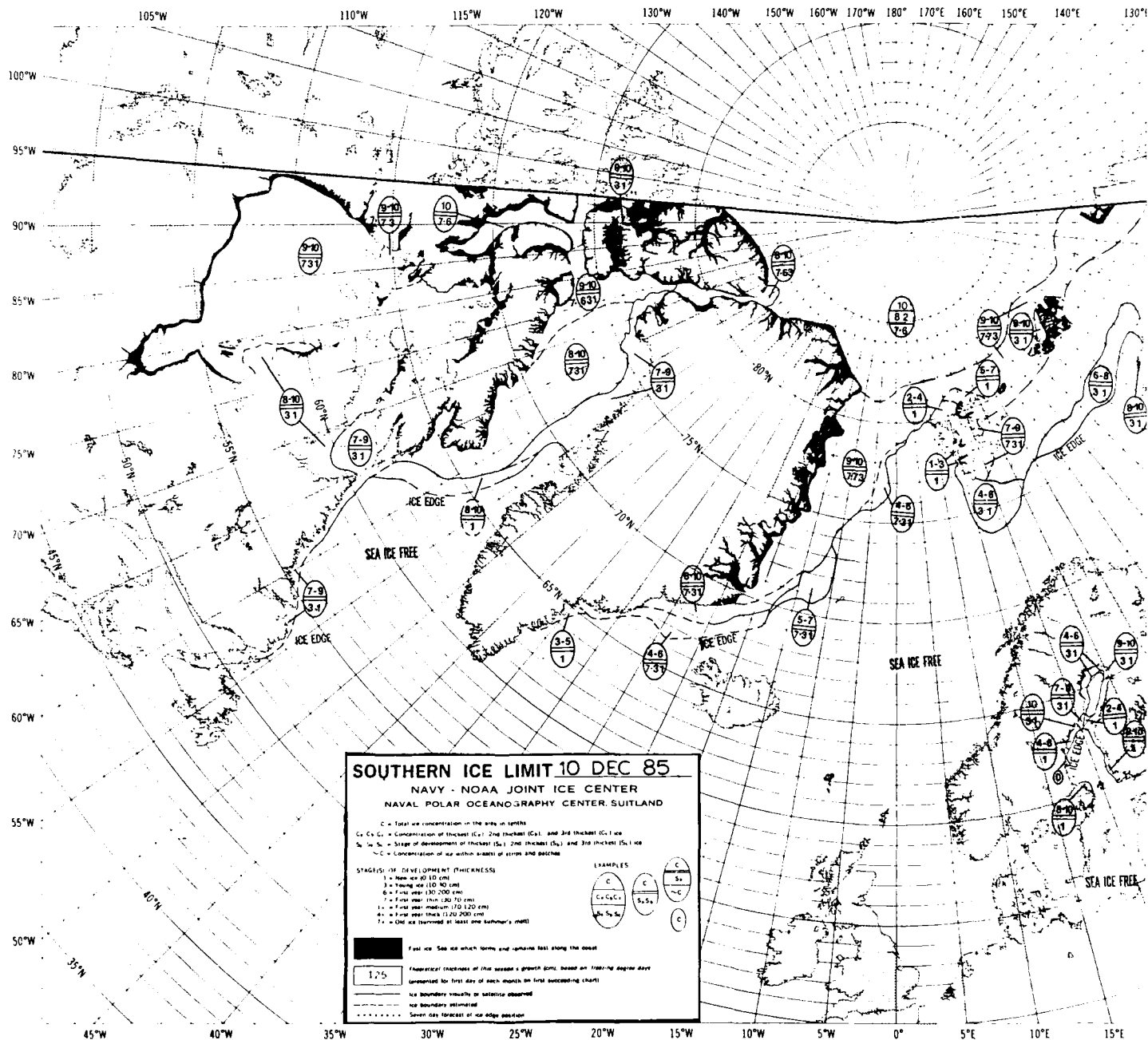
.....: Other sea ice limit at sea area position

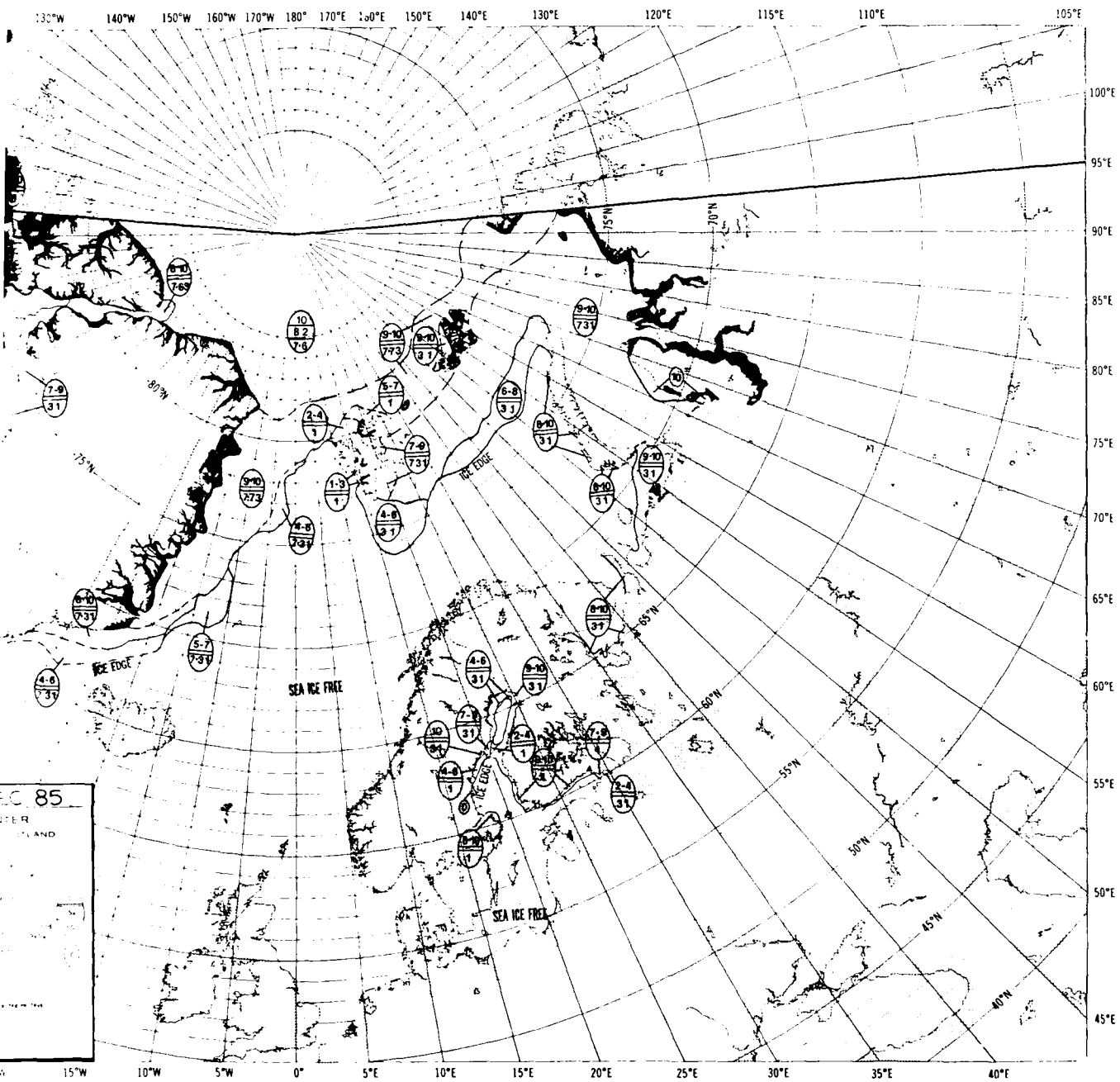
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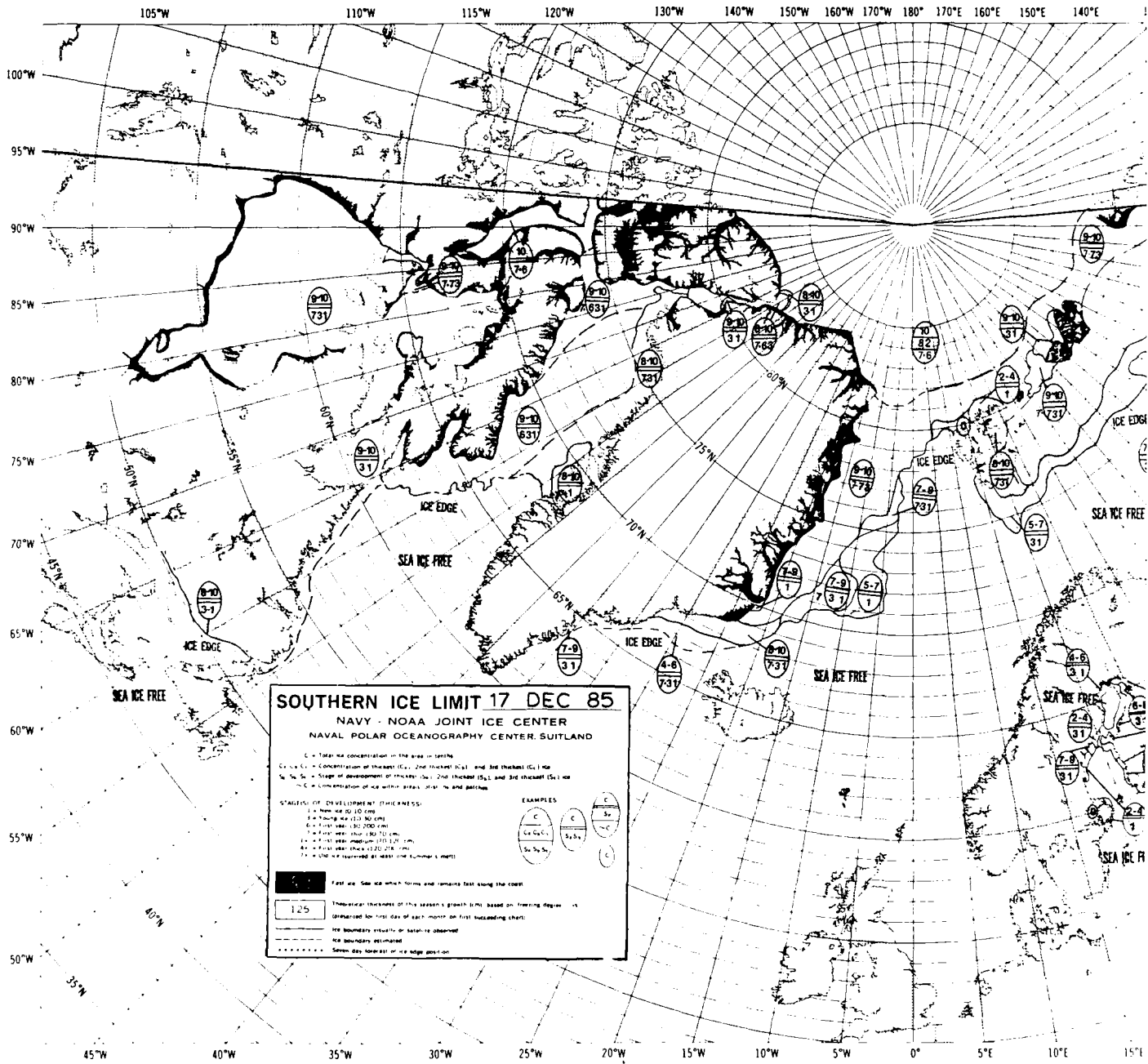


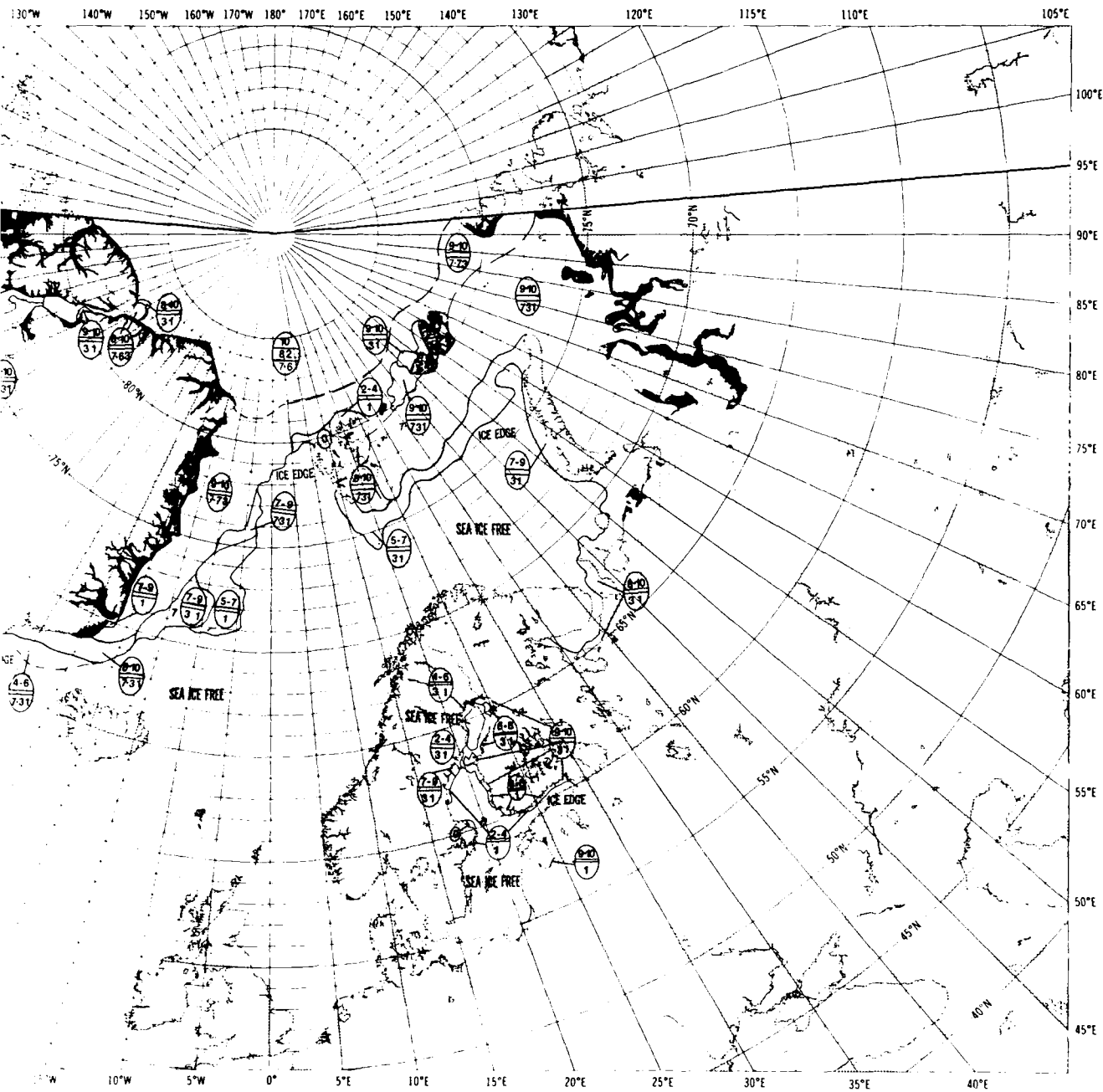


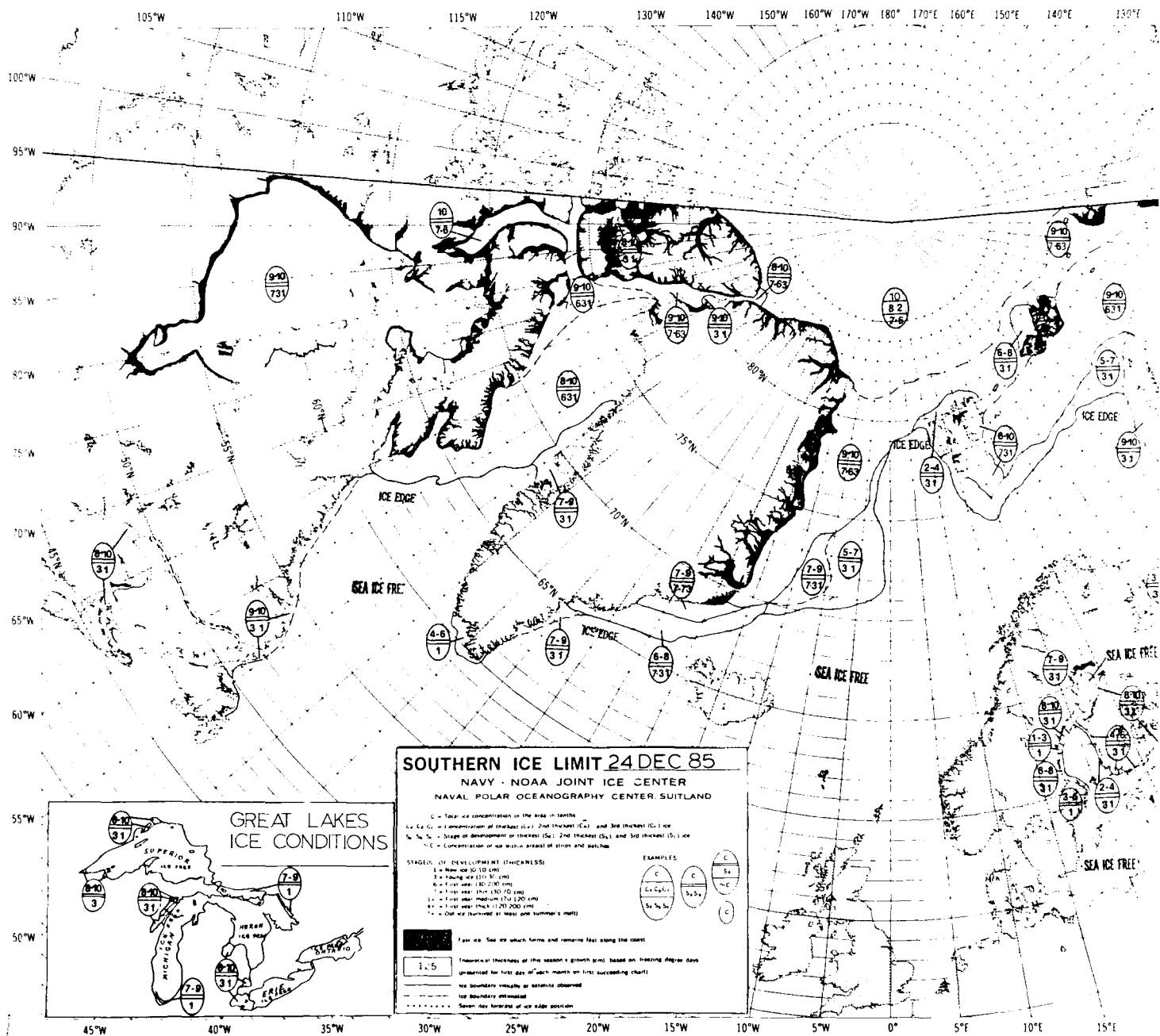


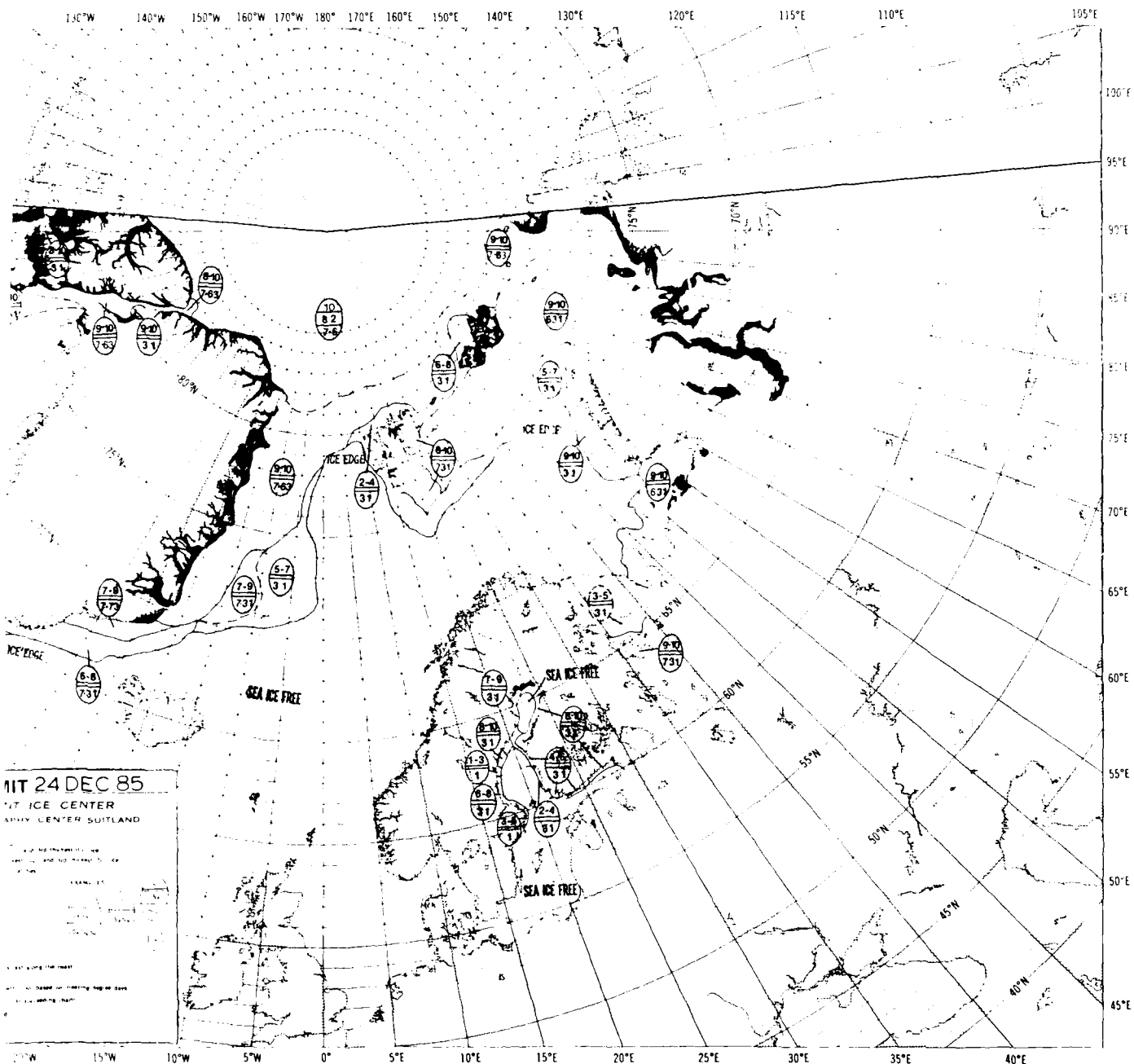


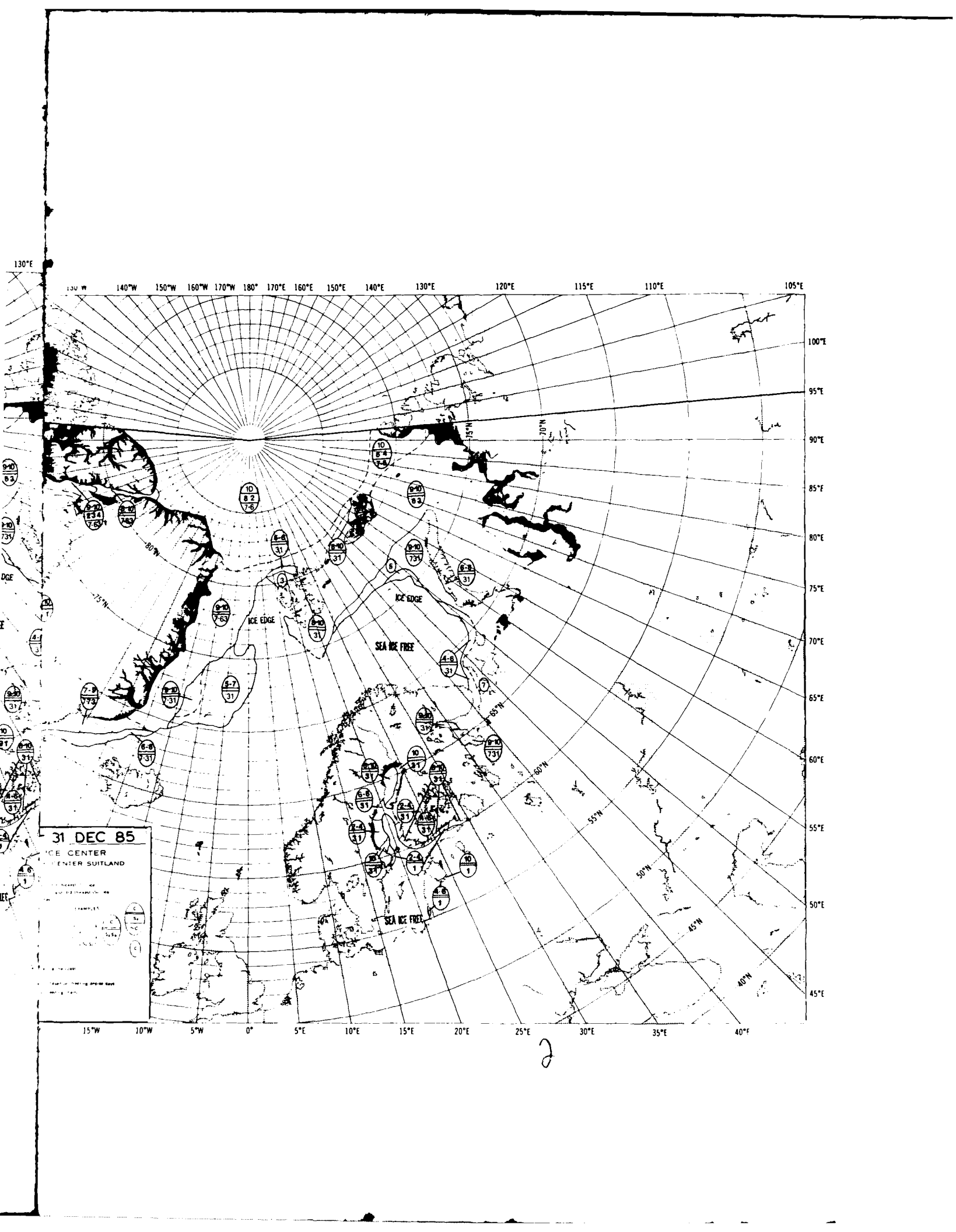


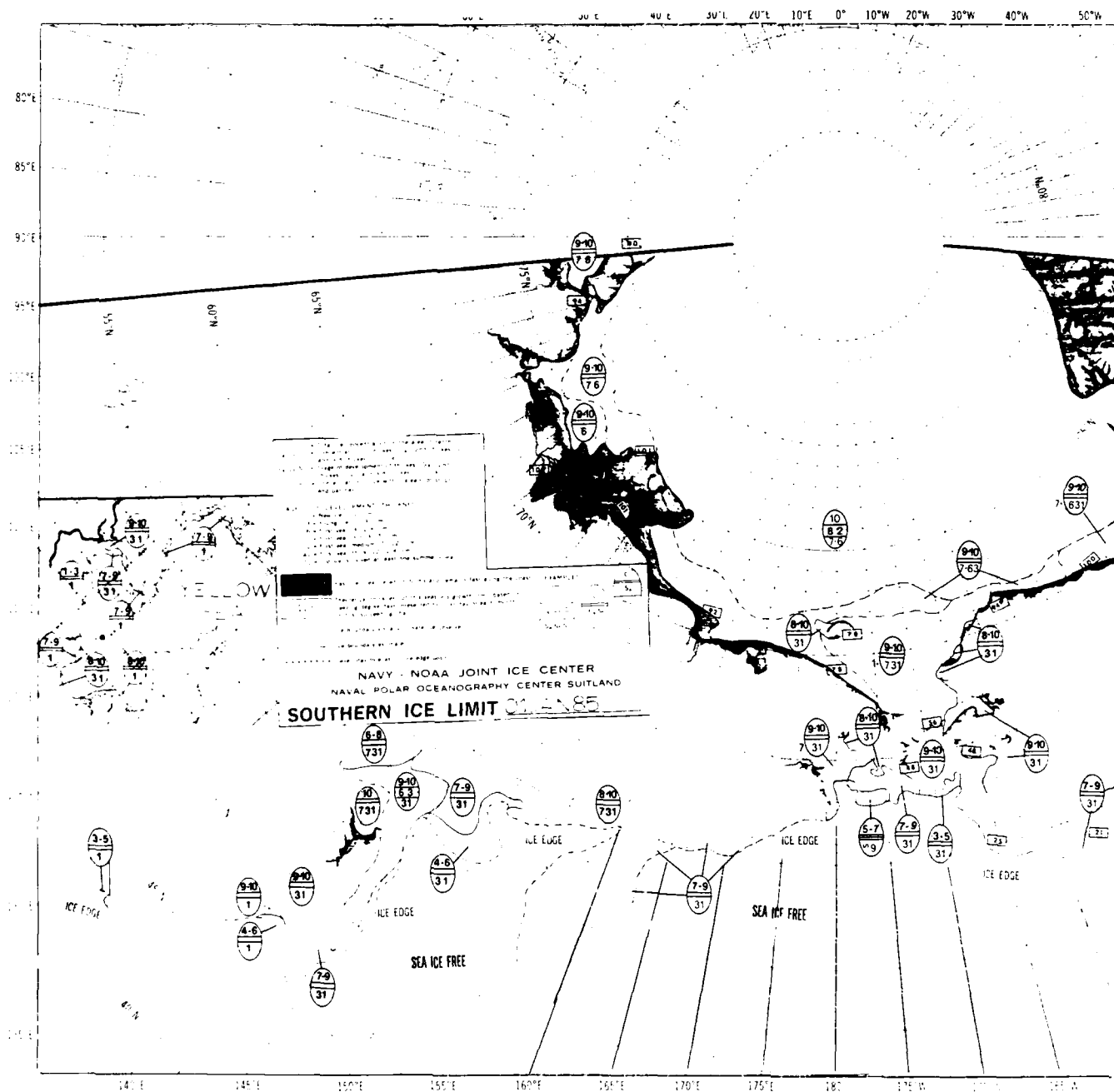


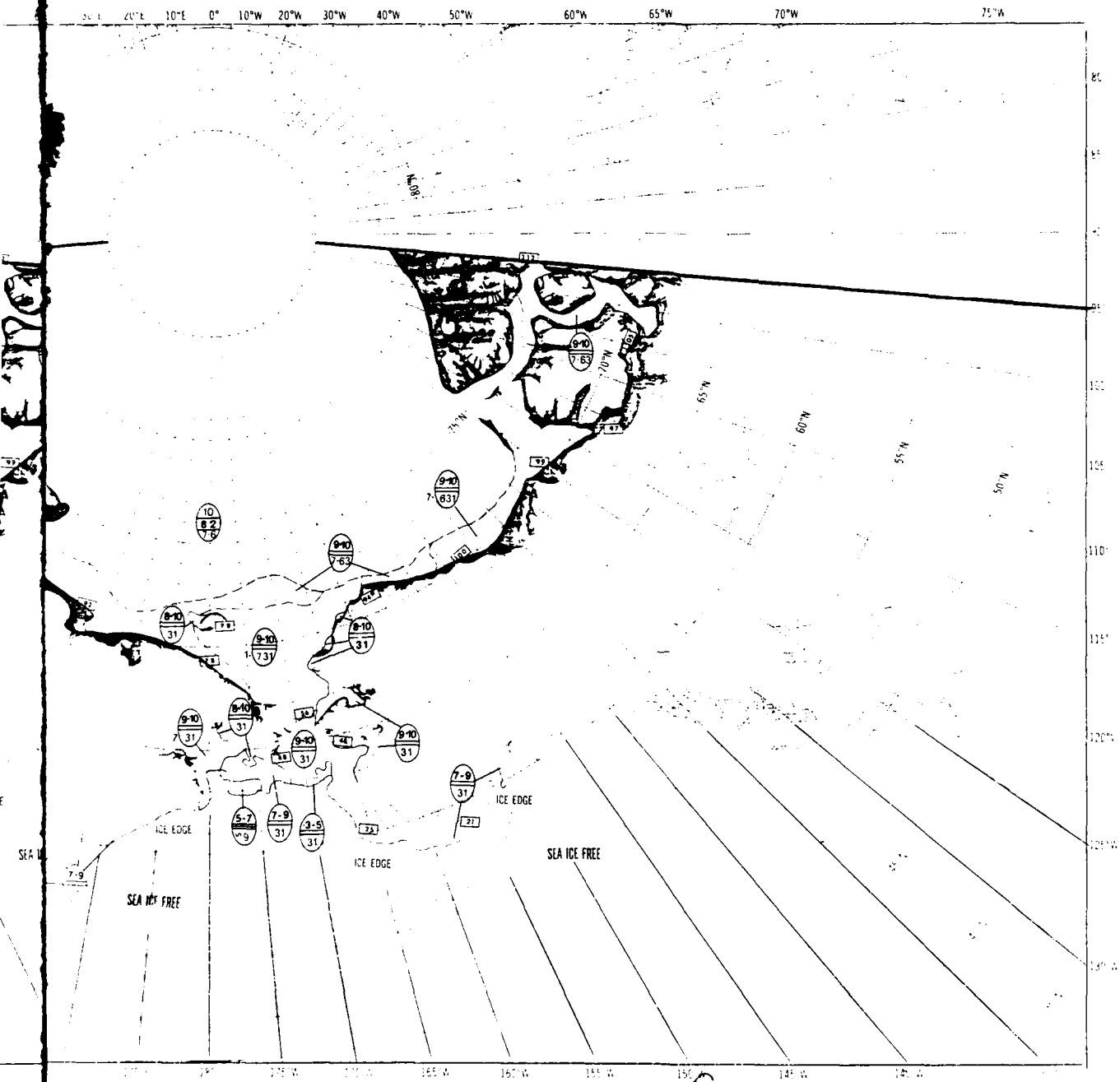


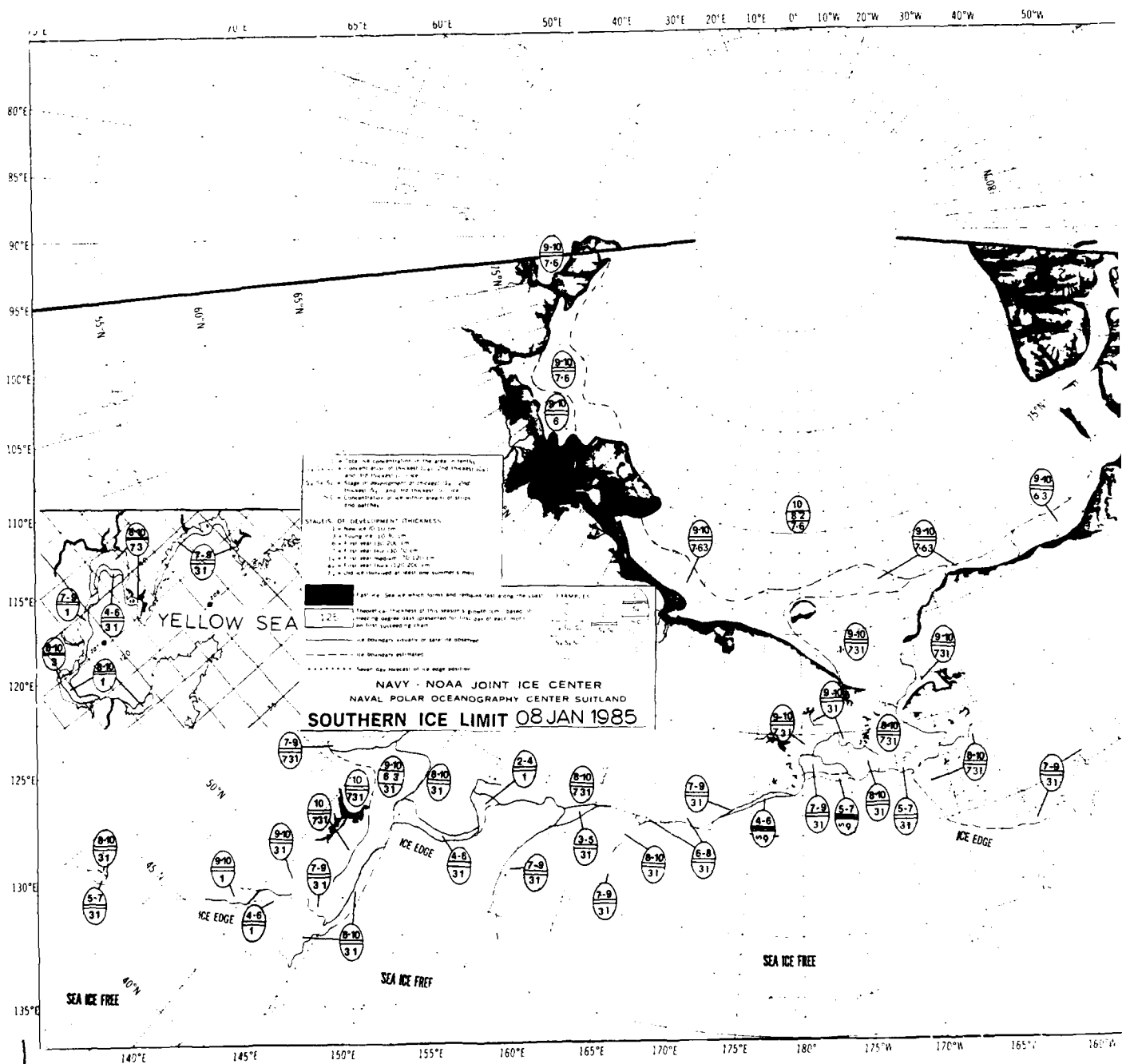


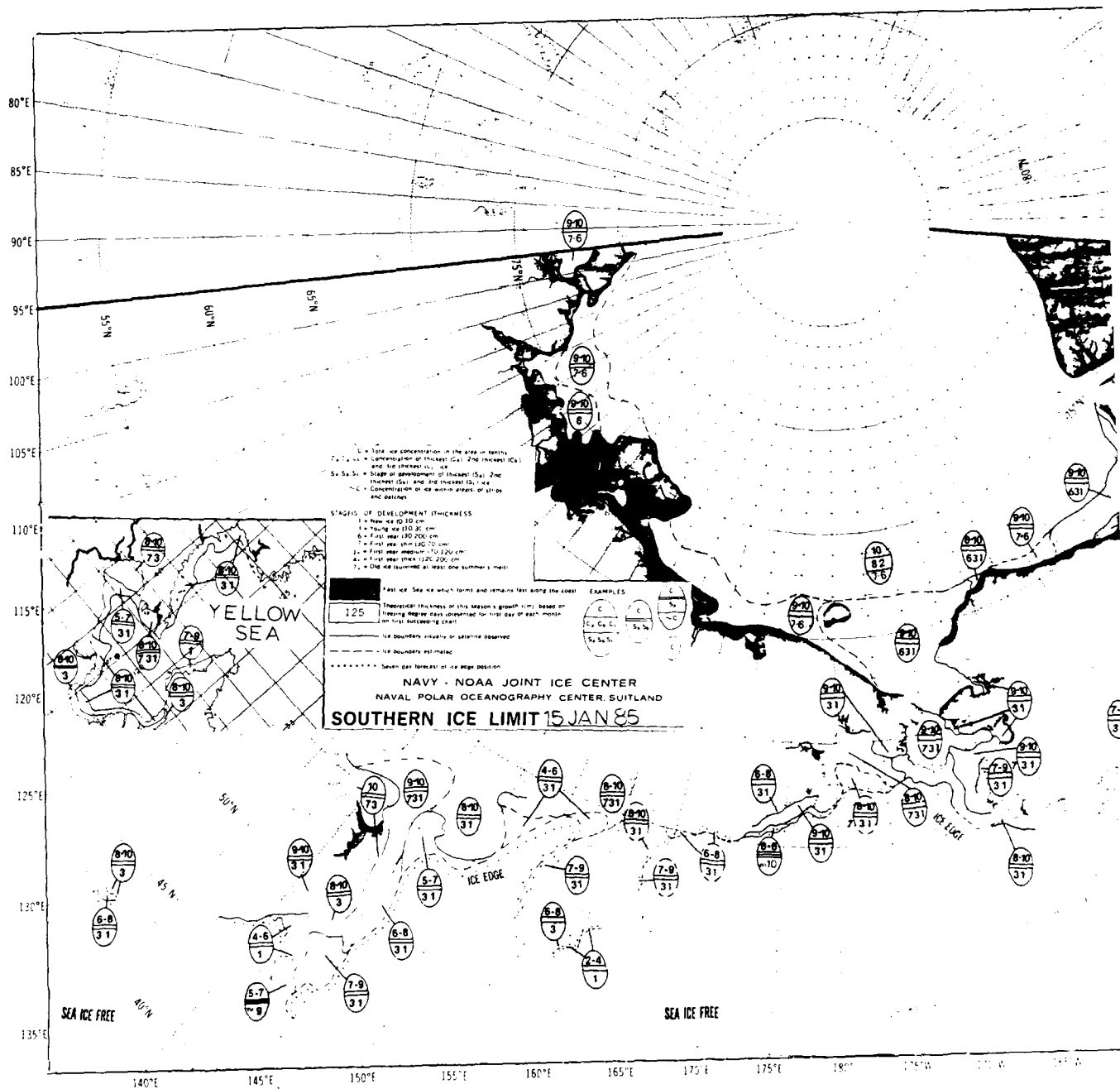


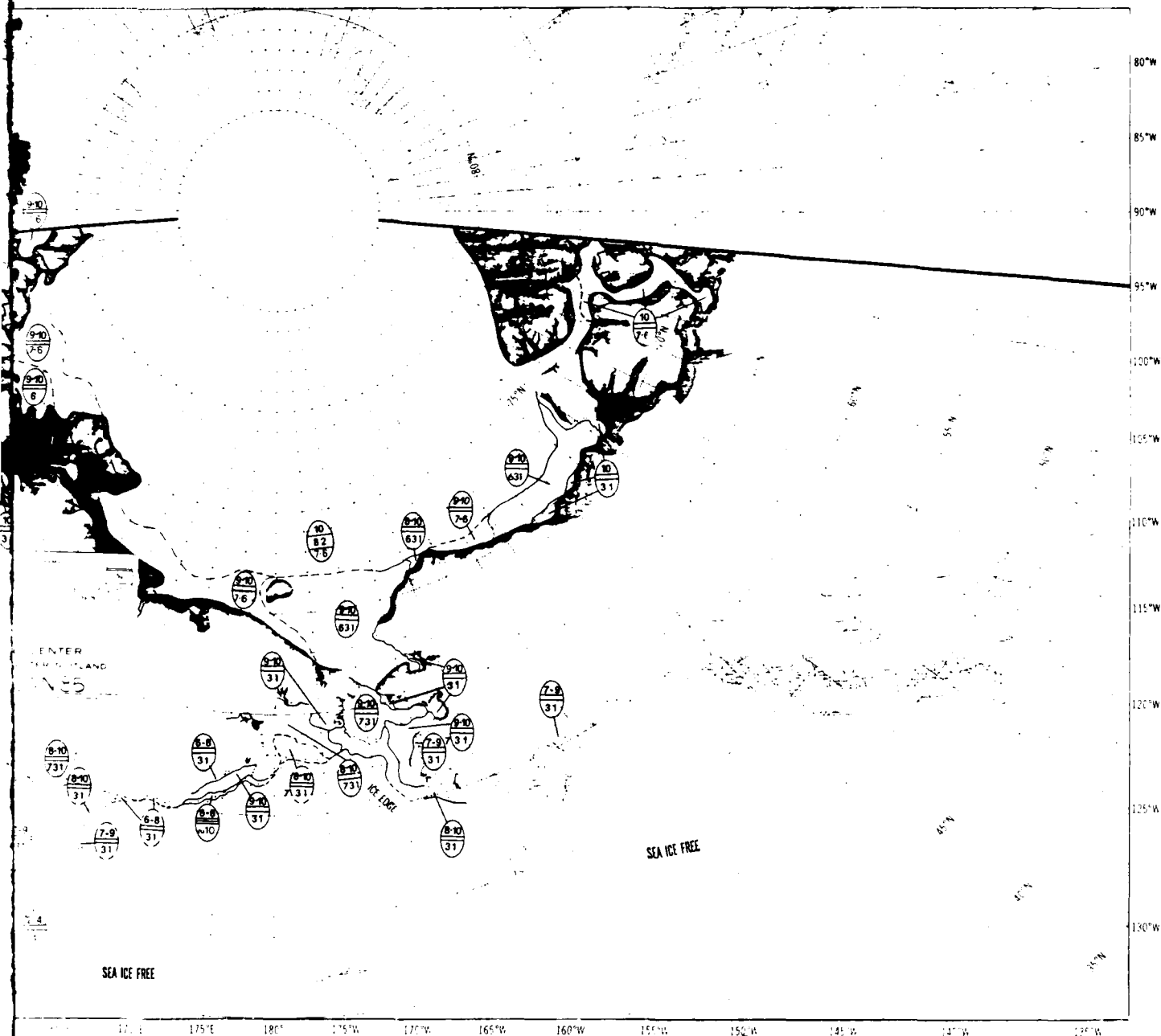




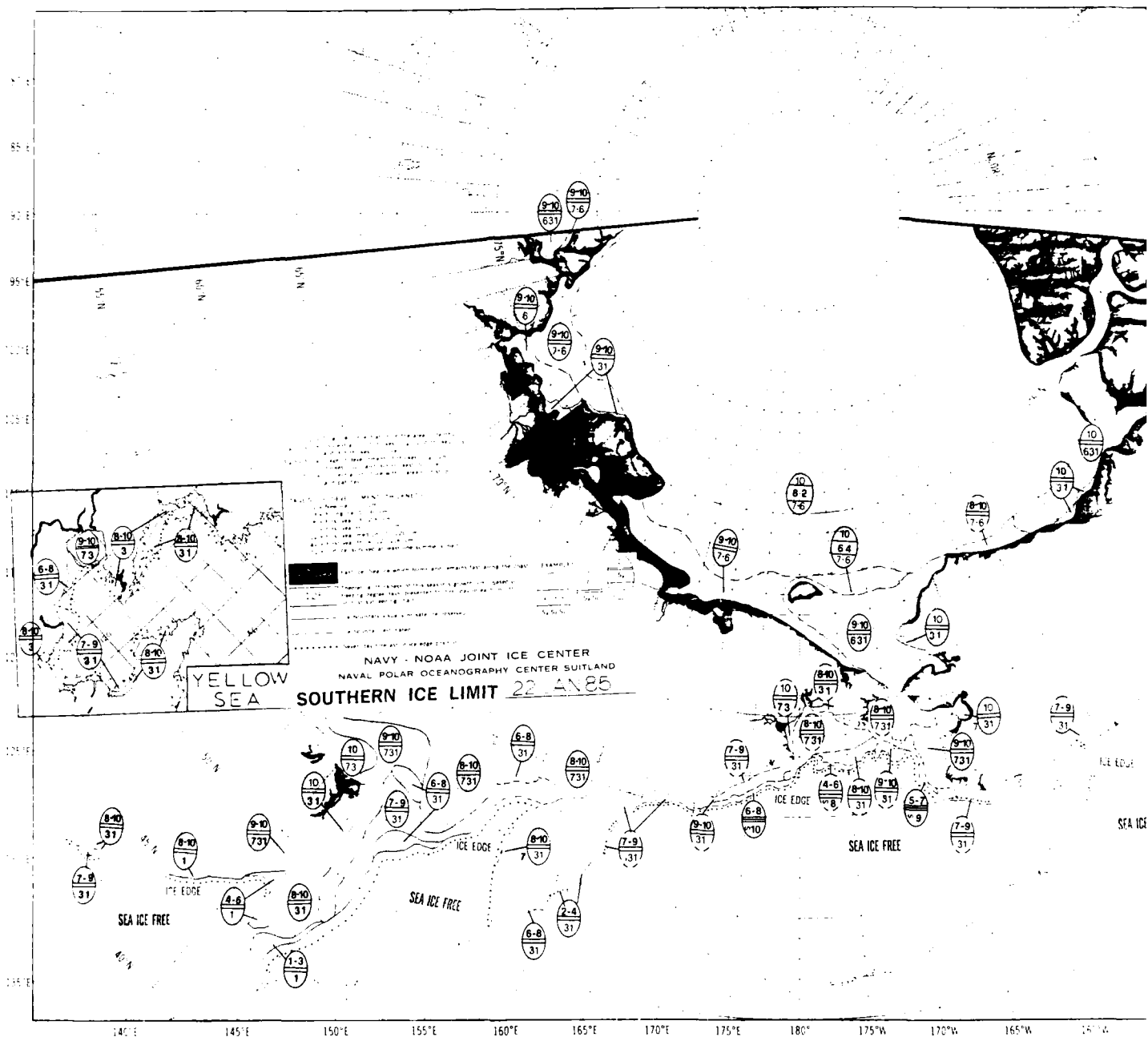


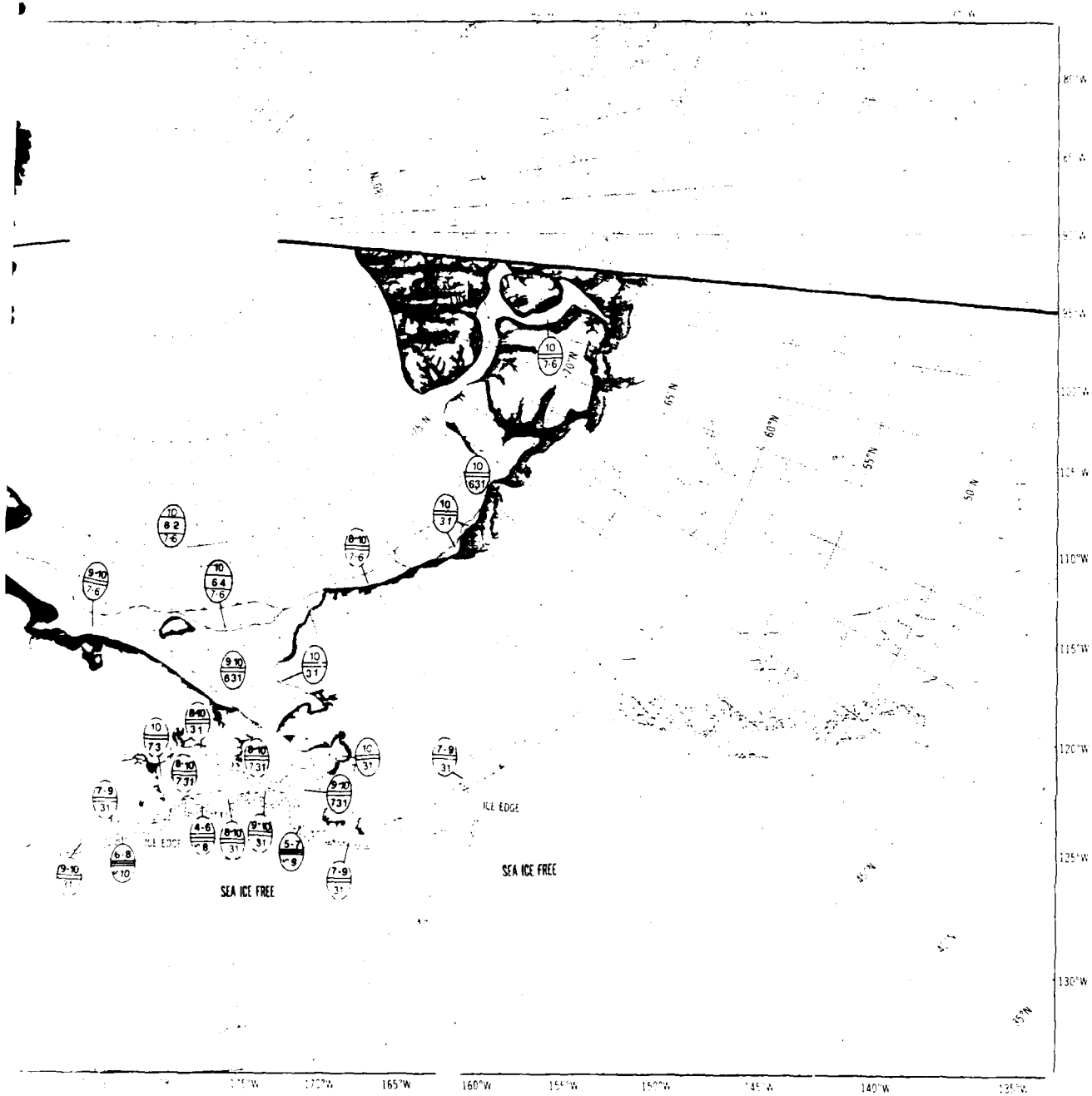


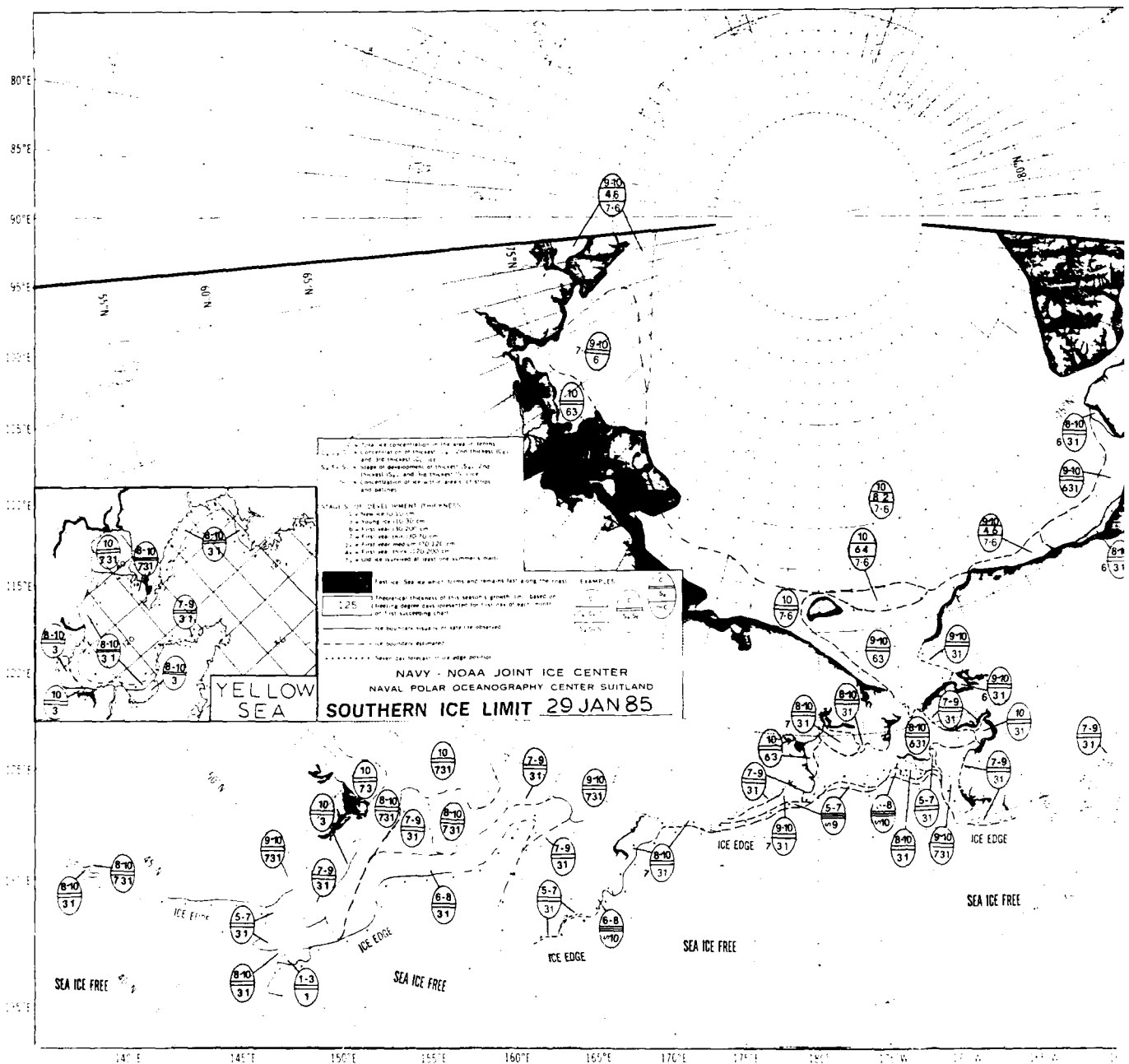




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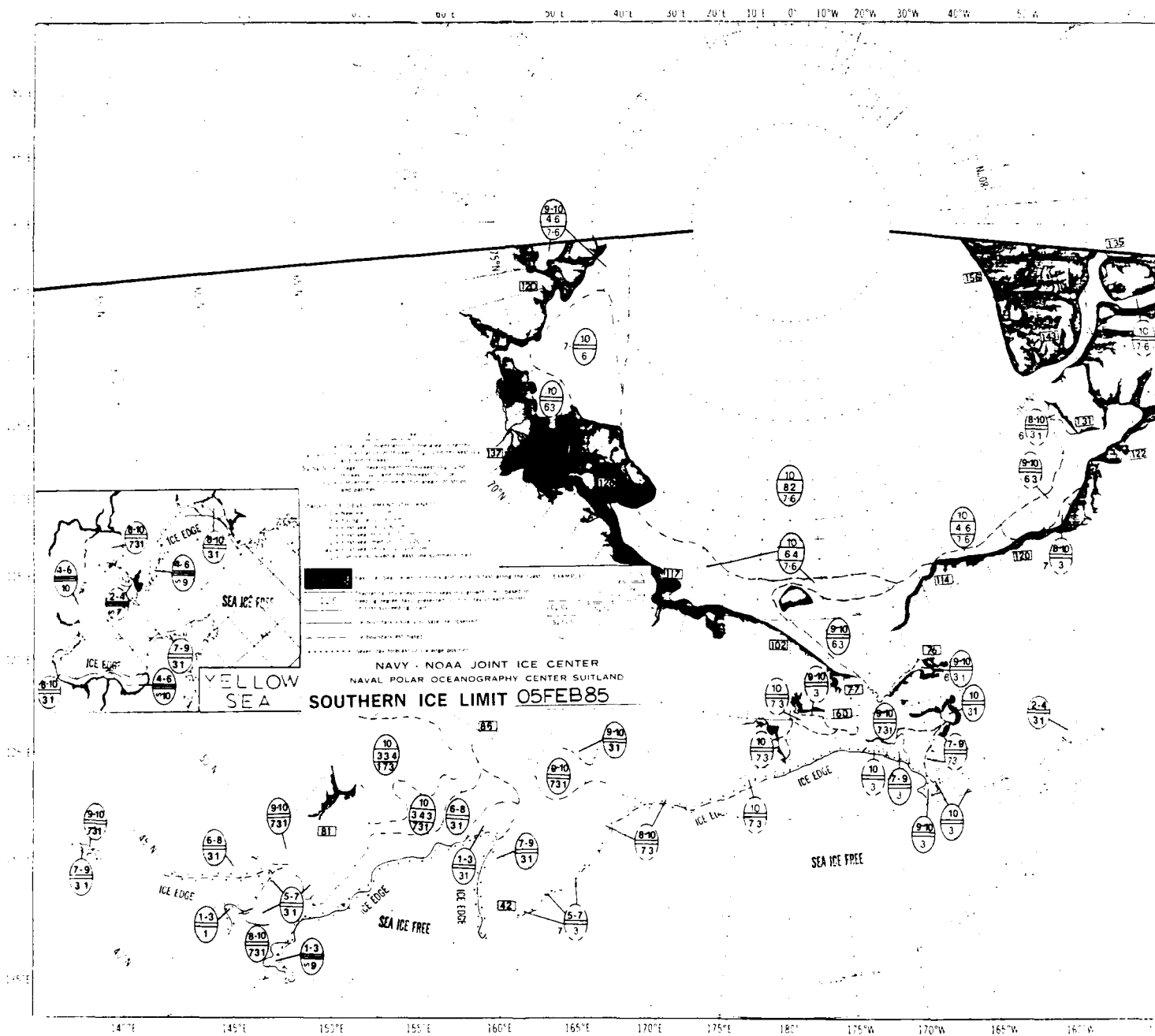


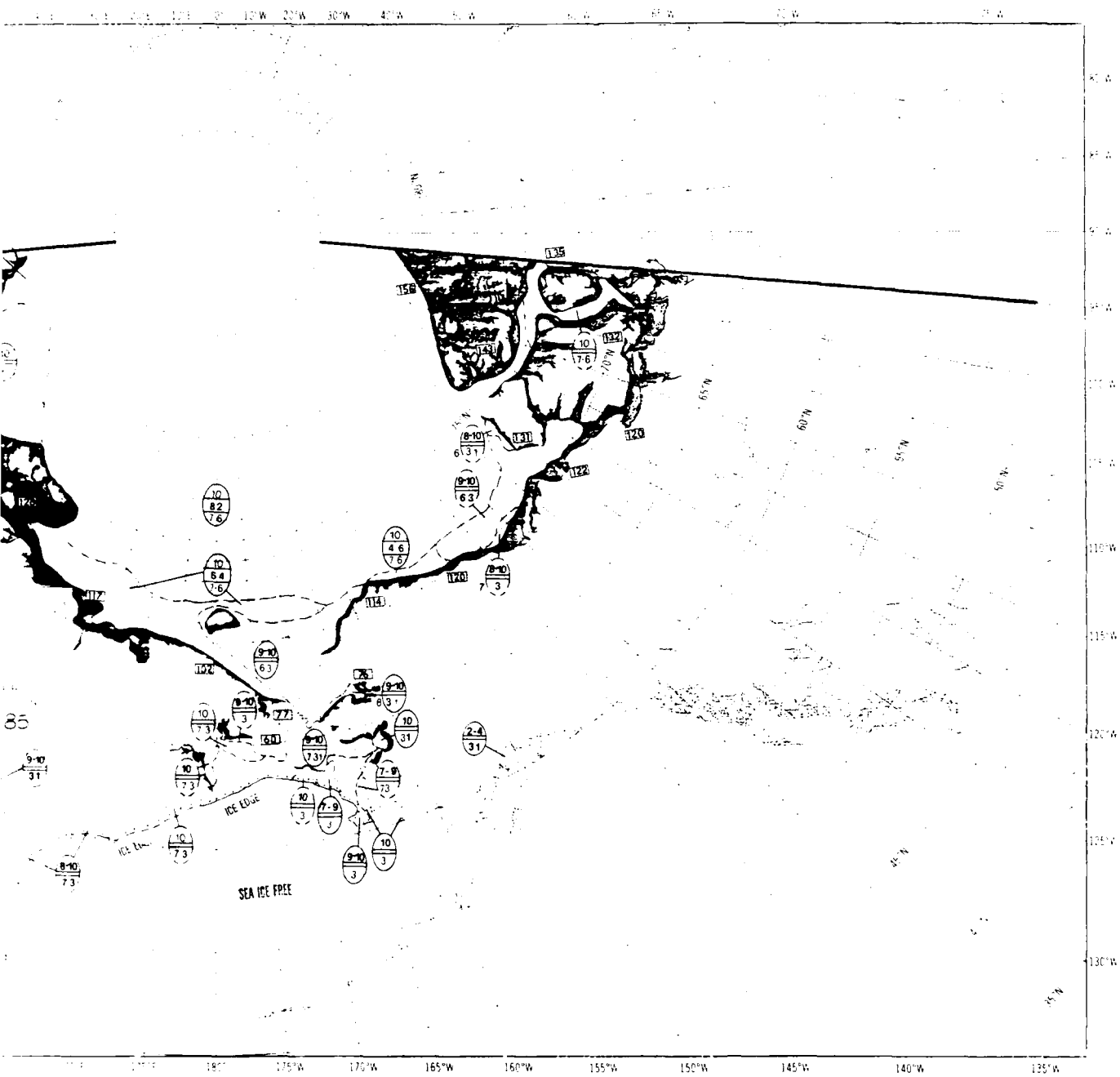




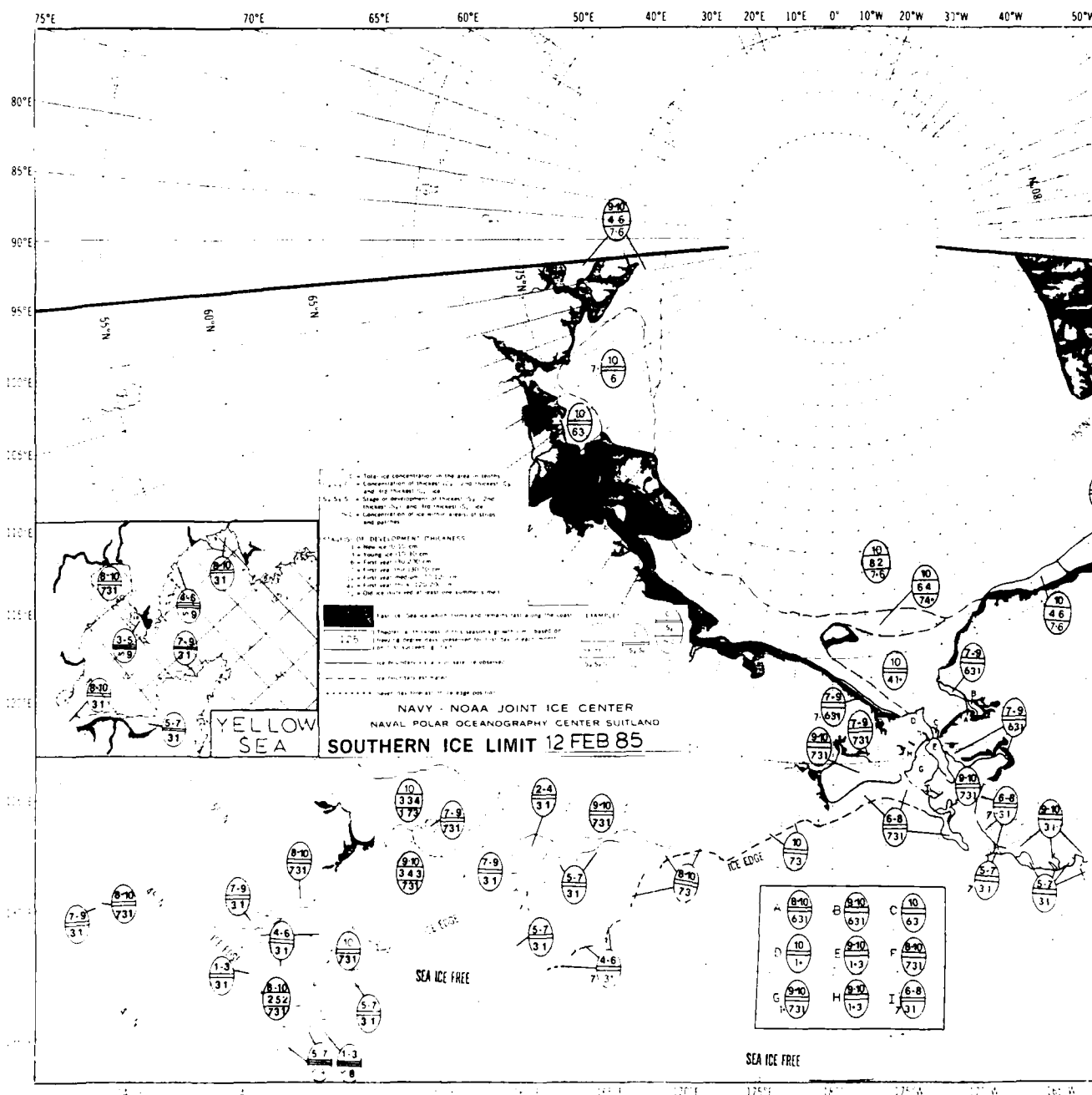


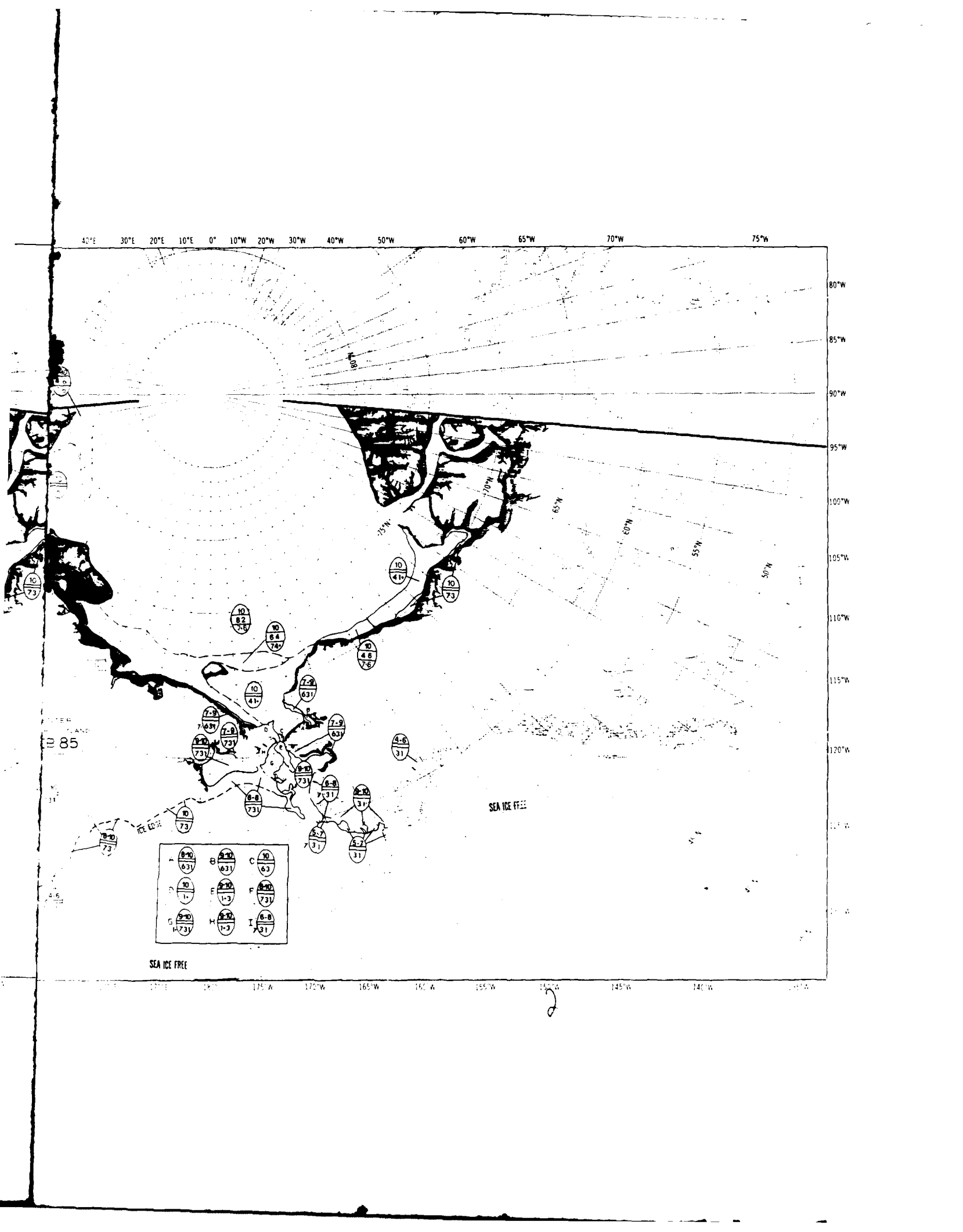
SEA ICE FREE

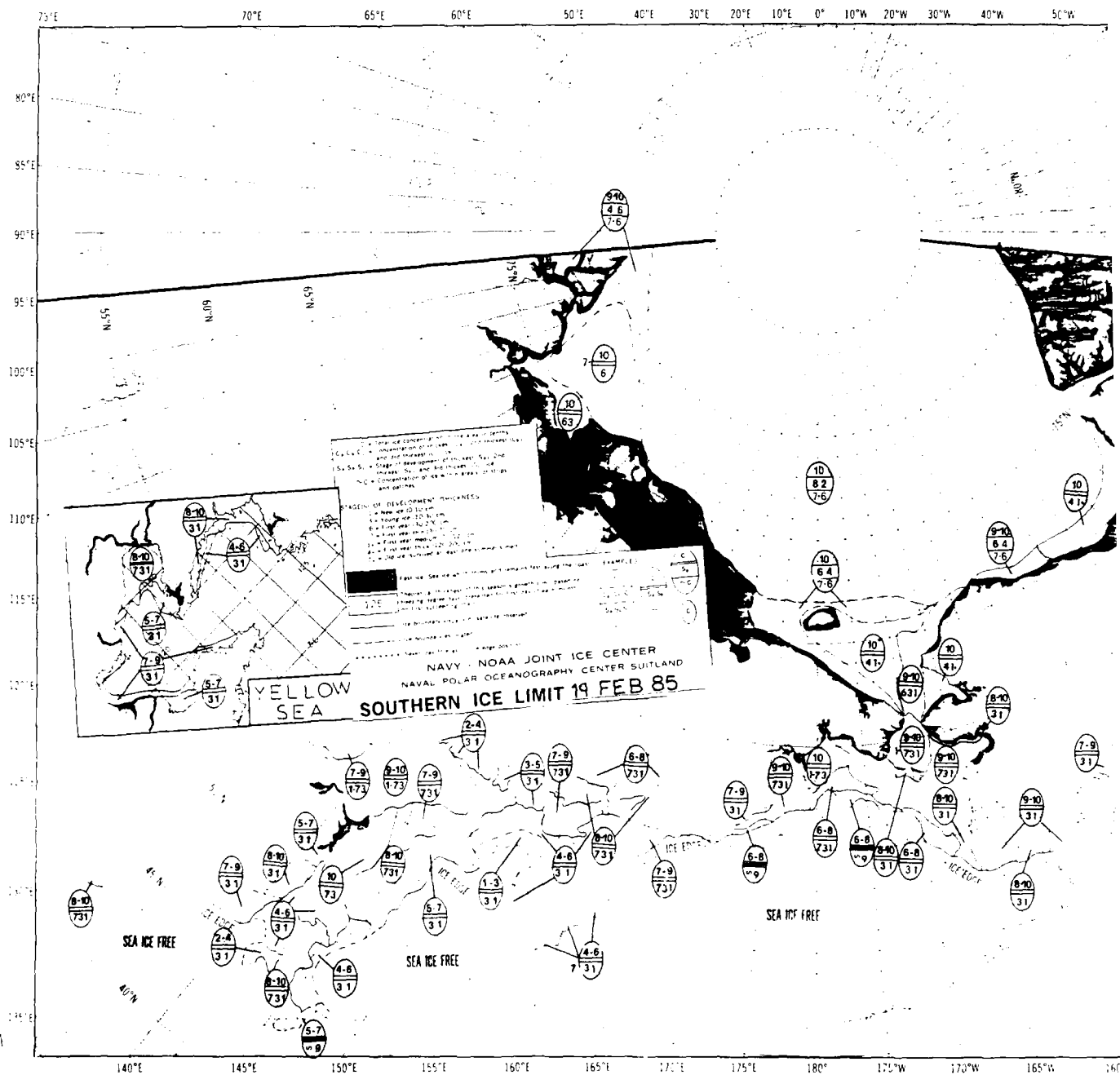


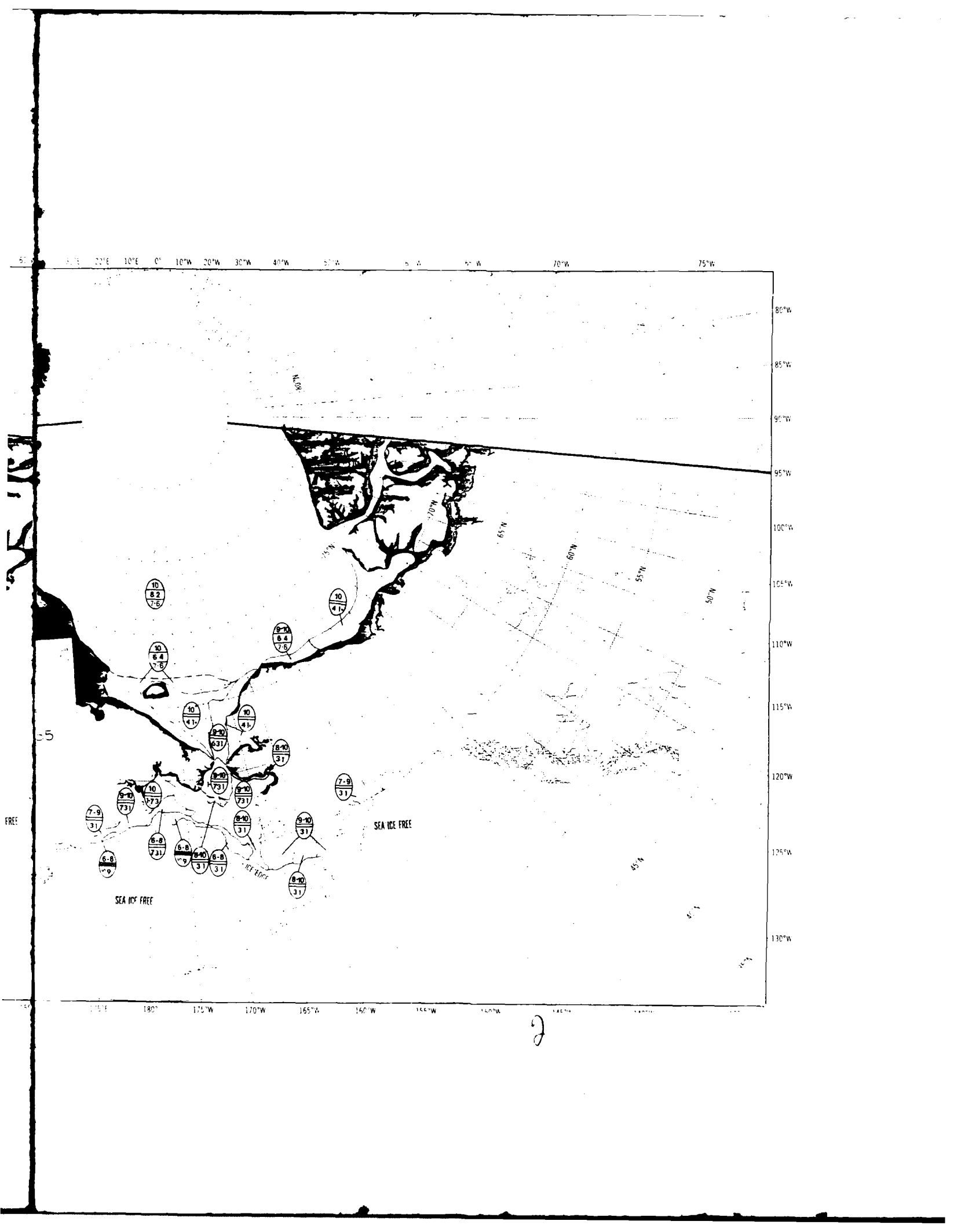


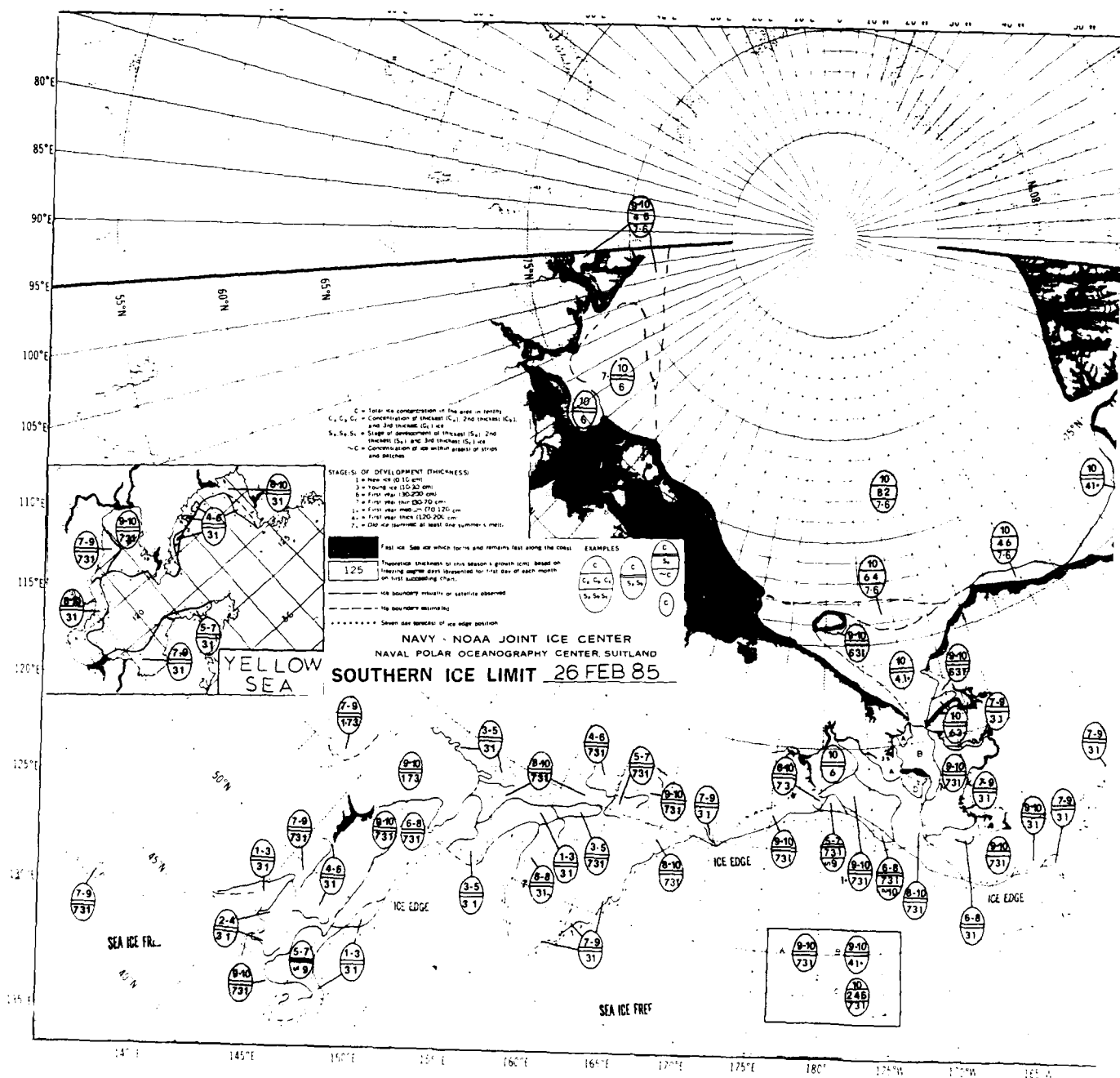
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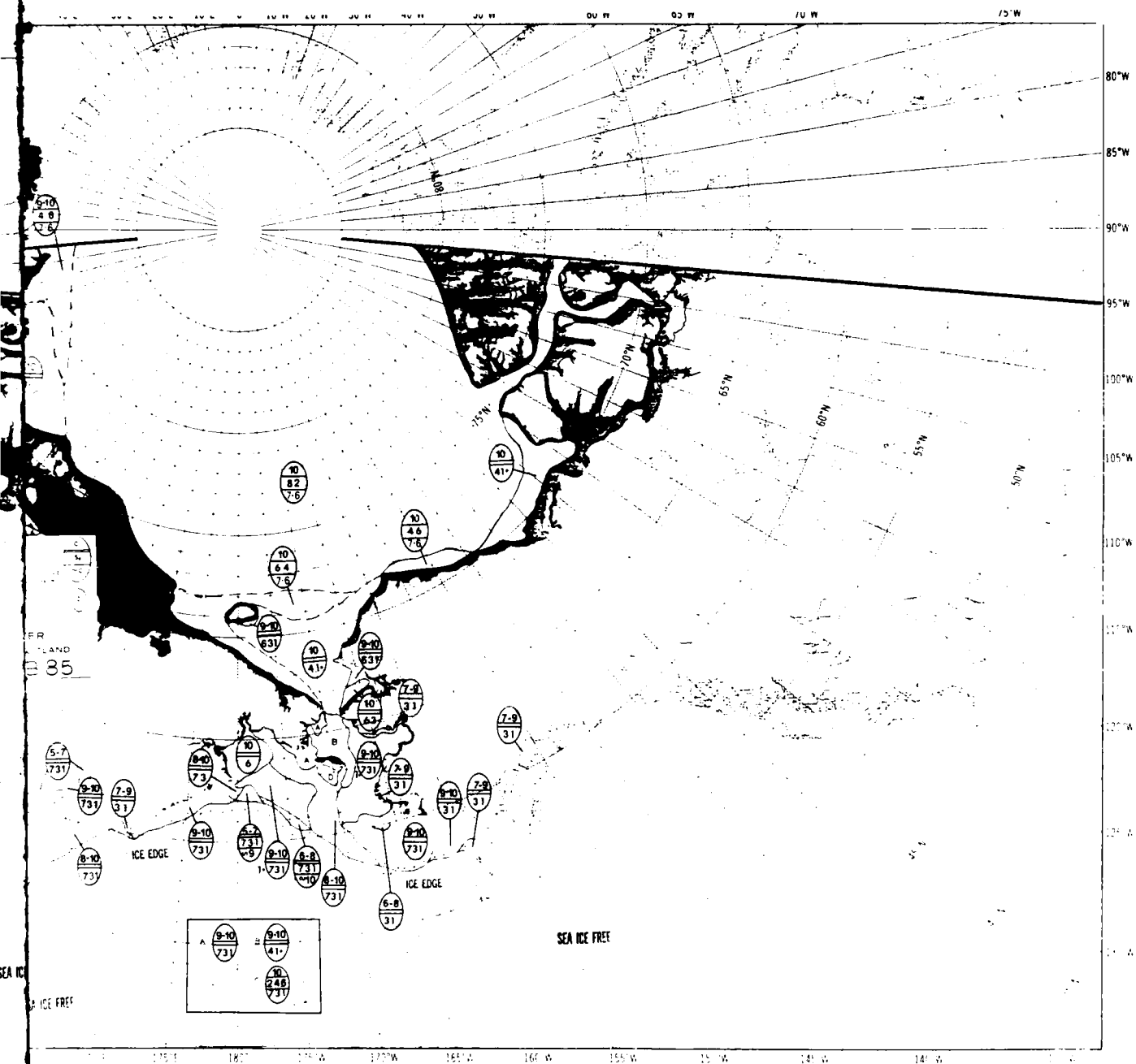


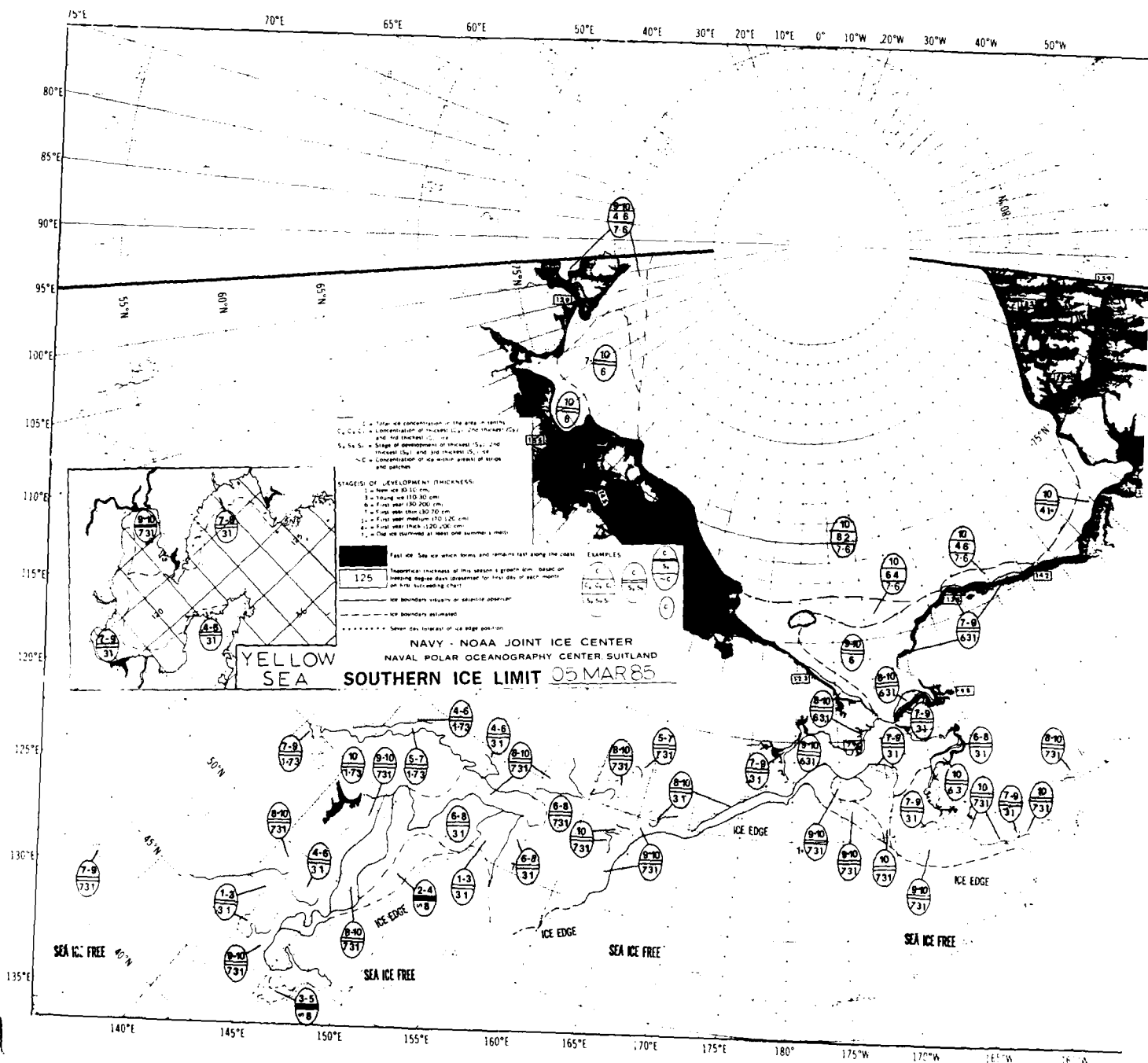


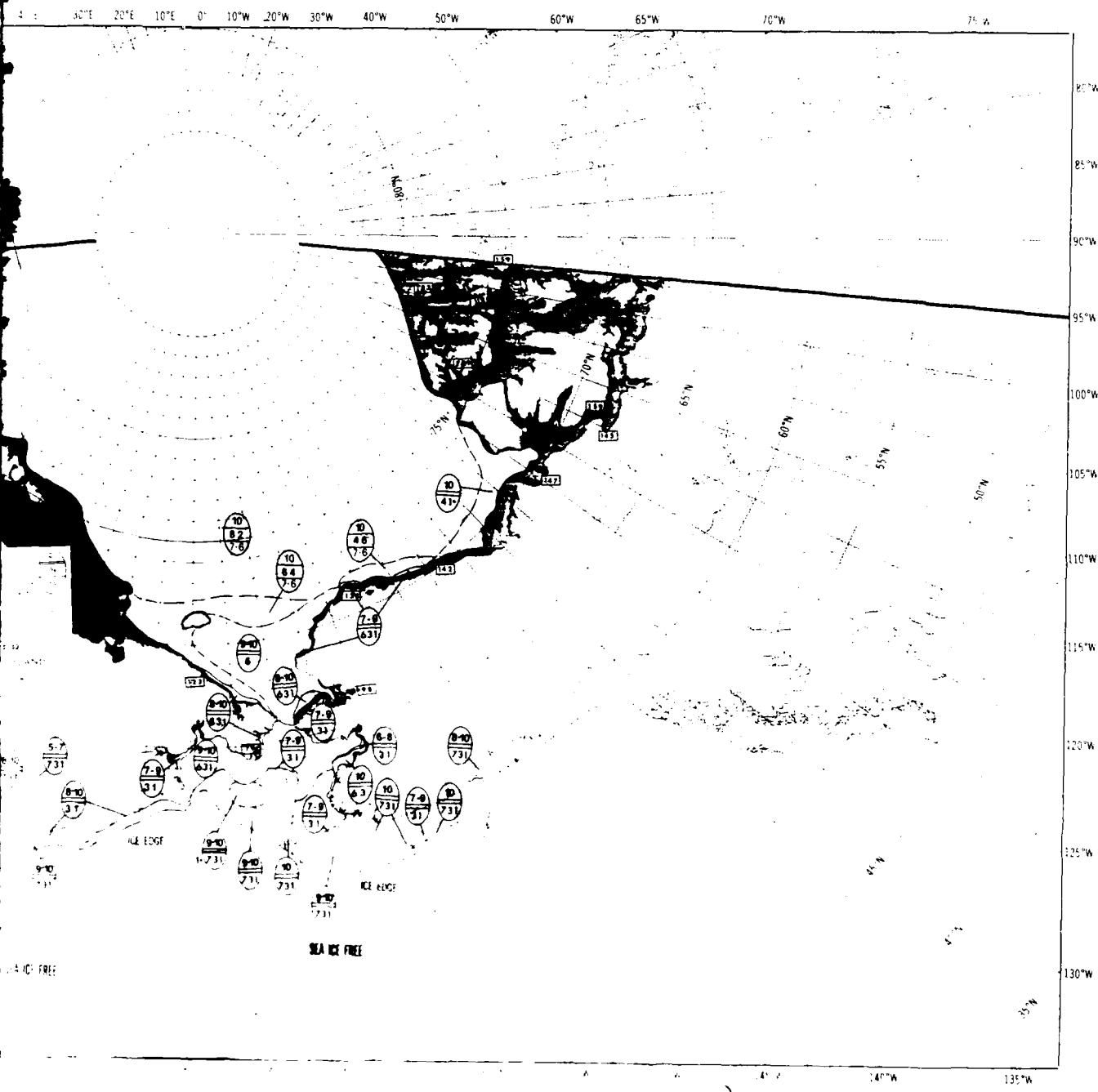


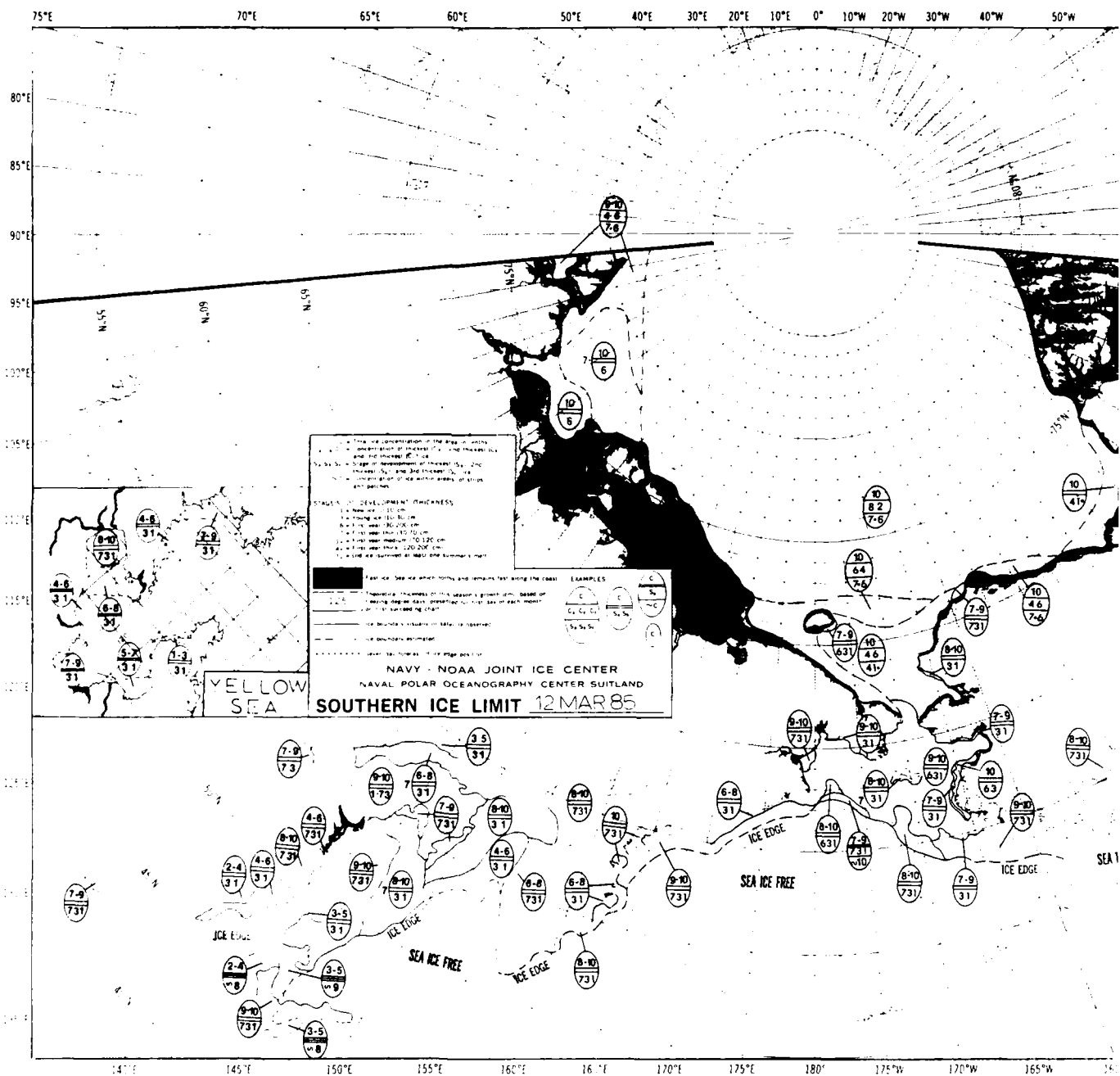


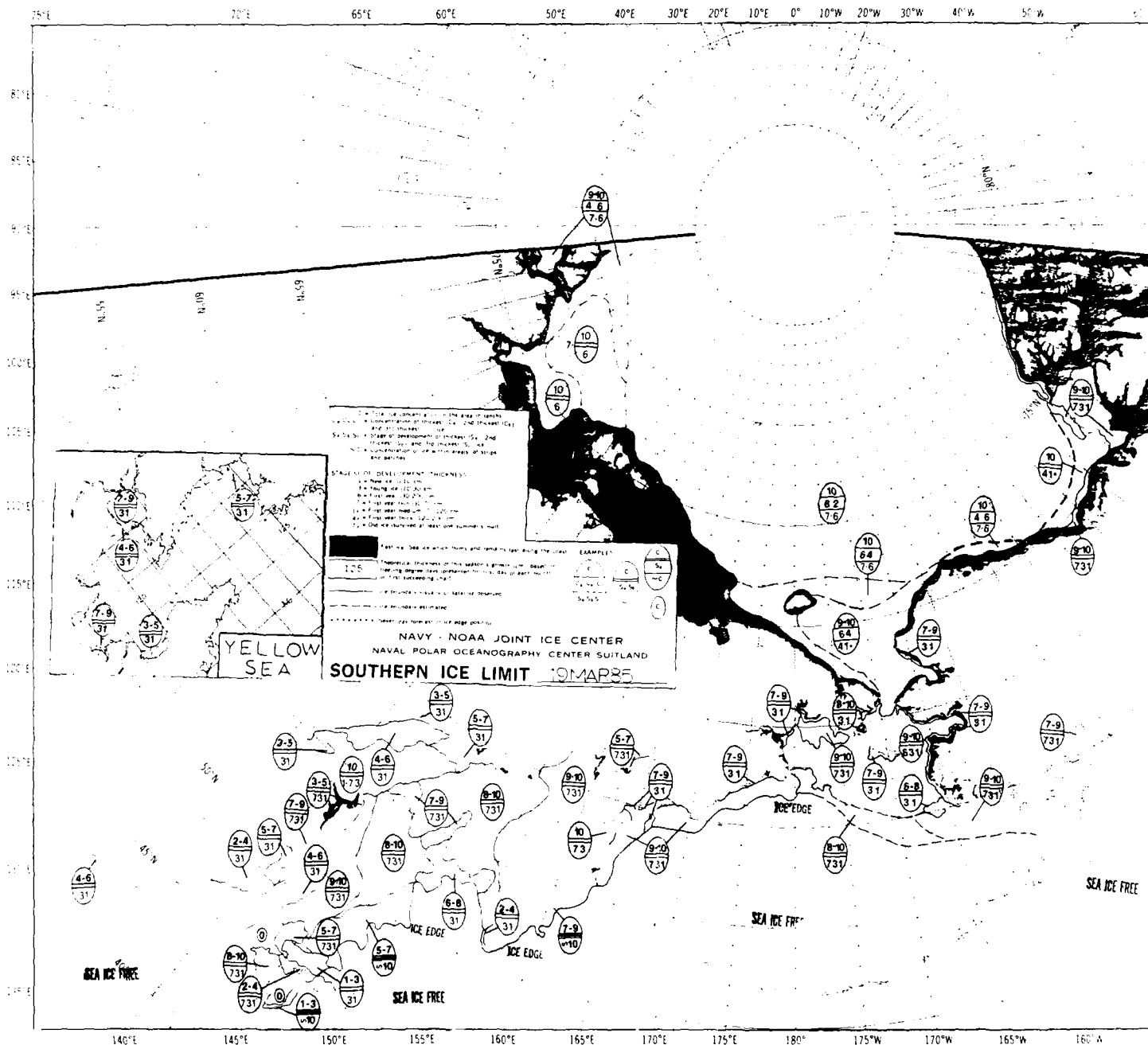


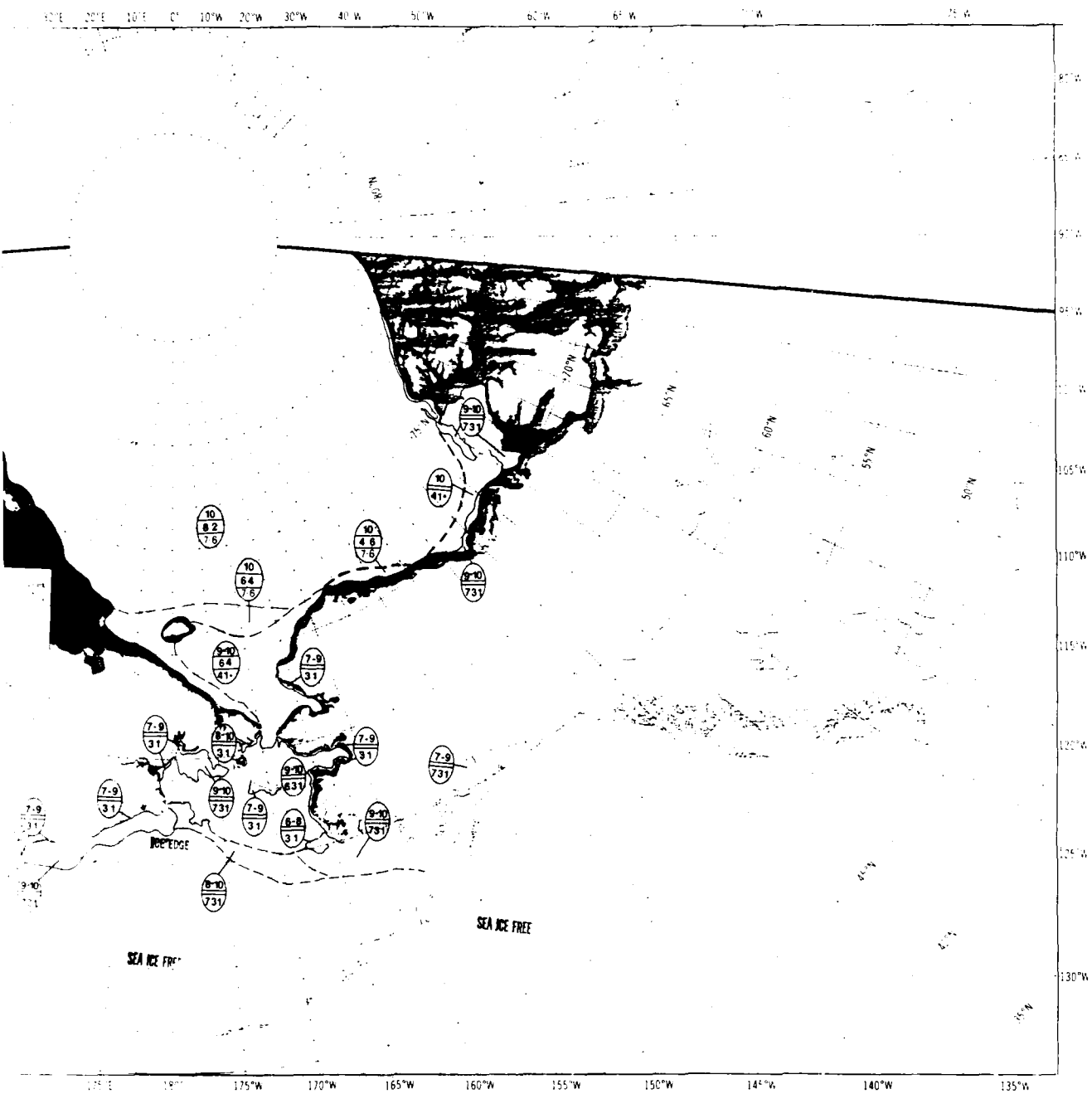


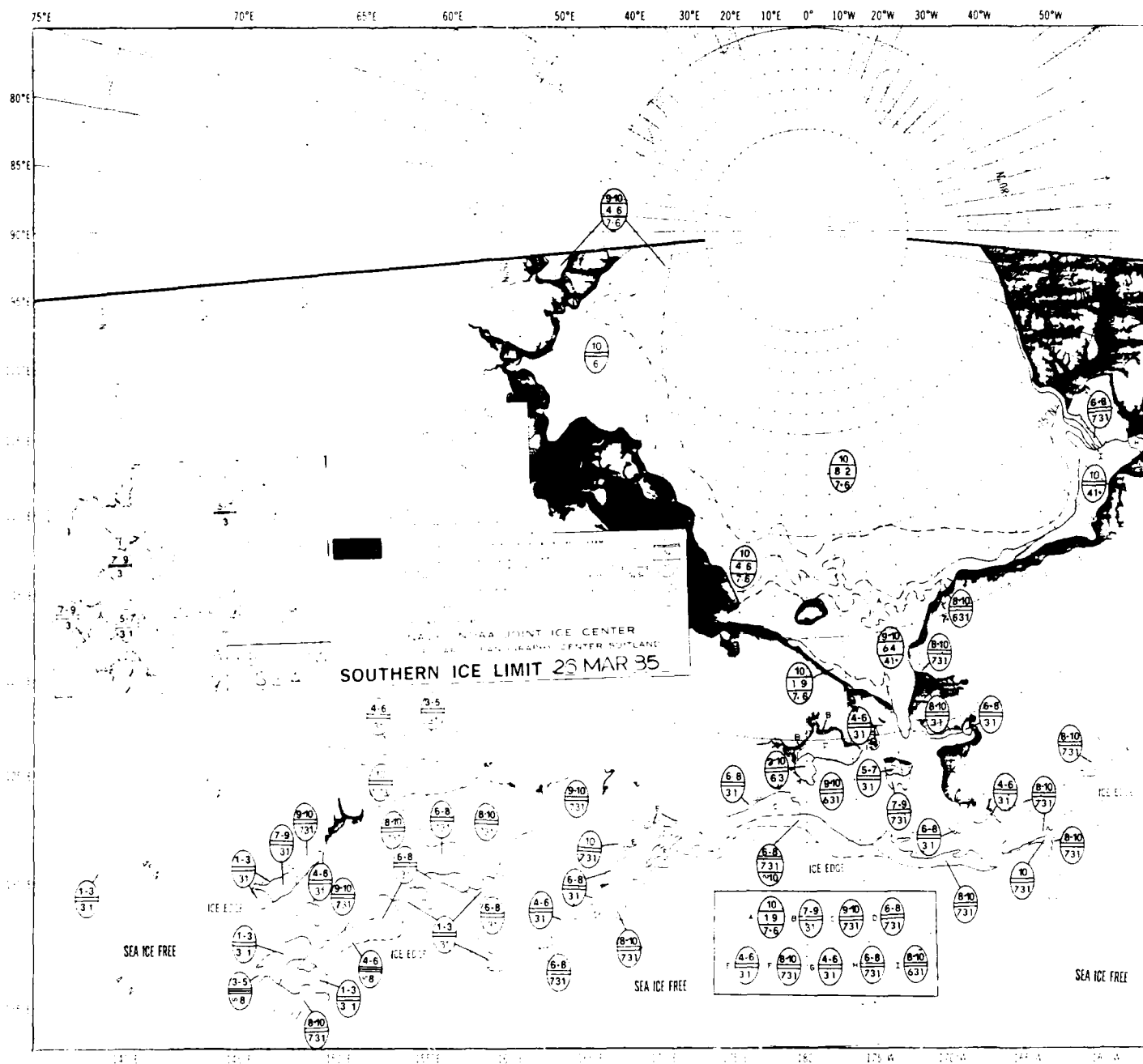


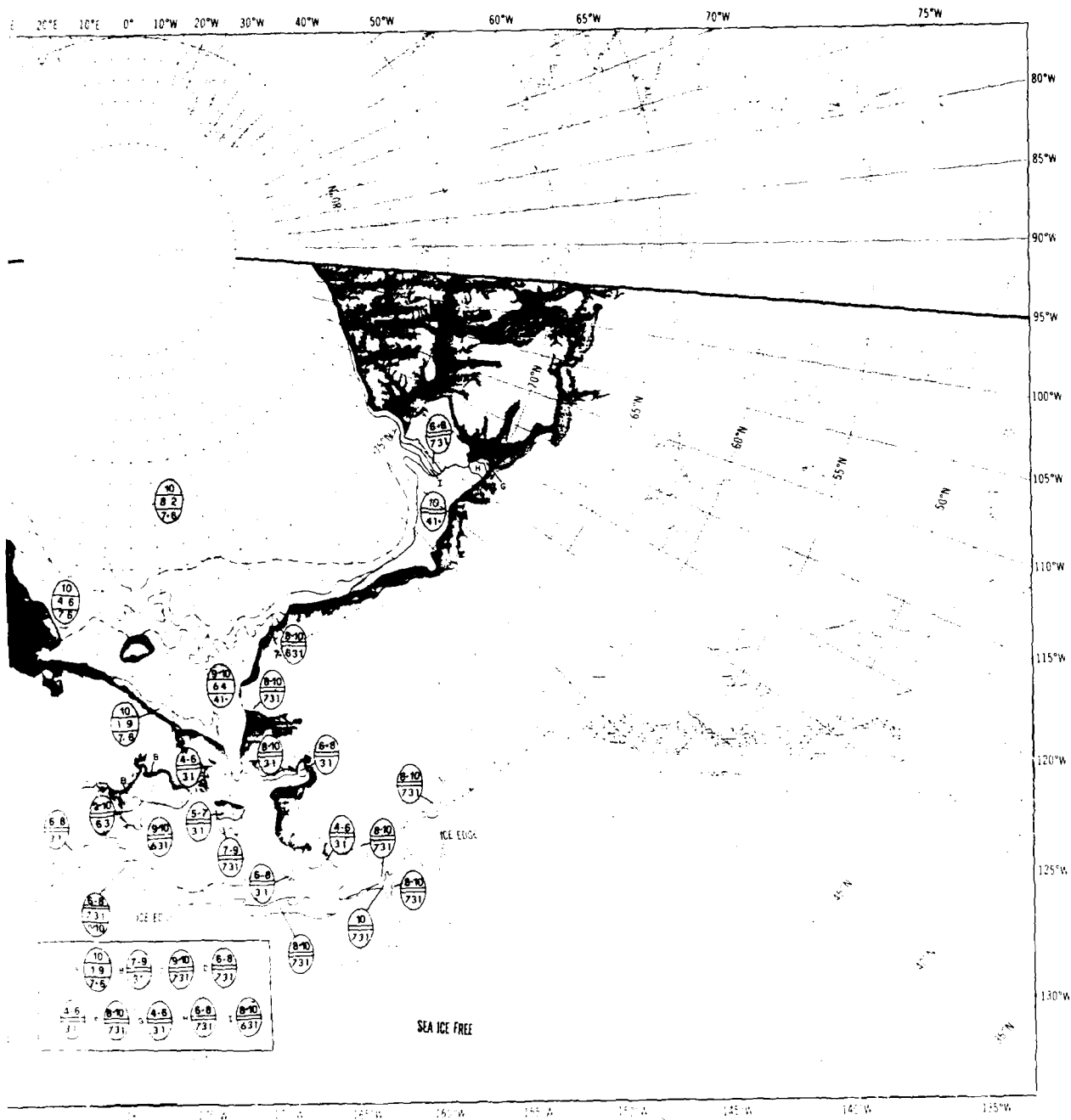


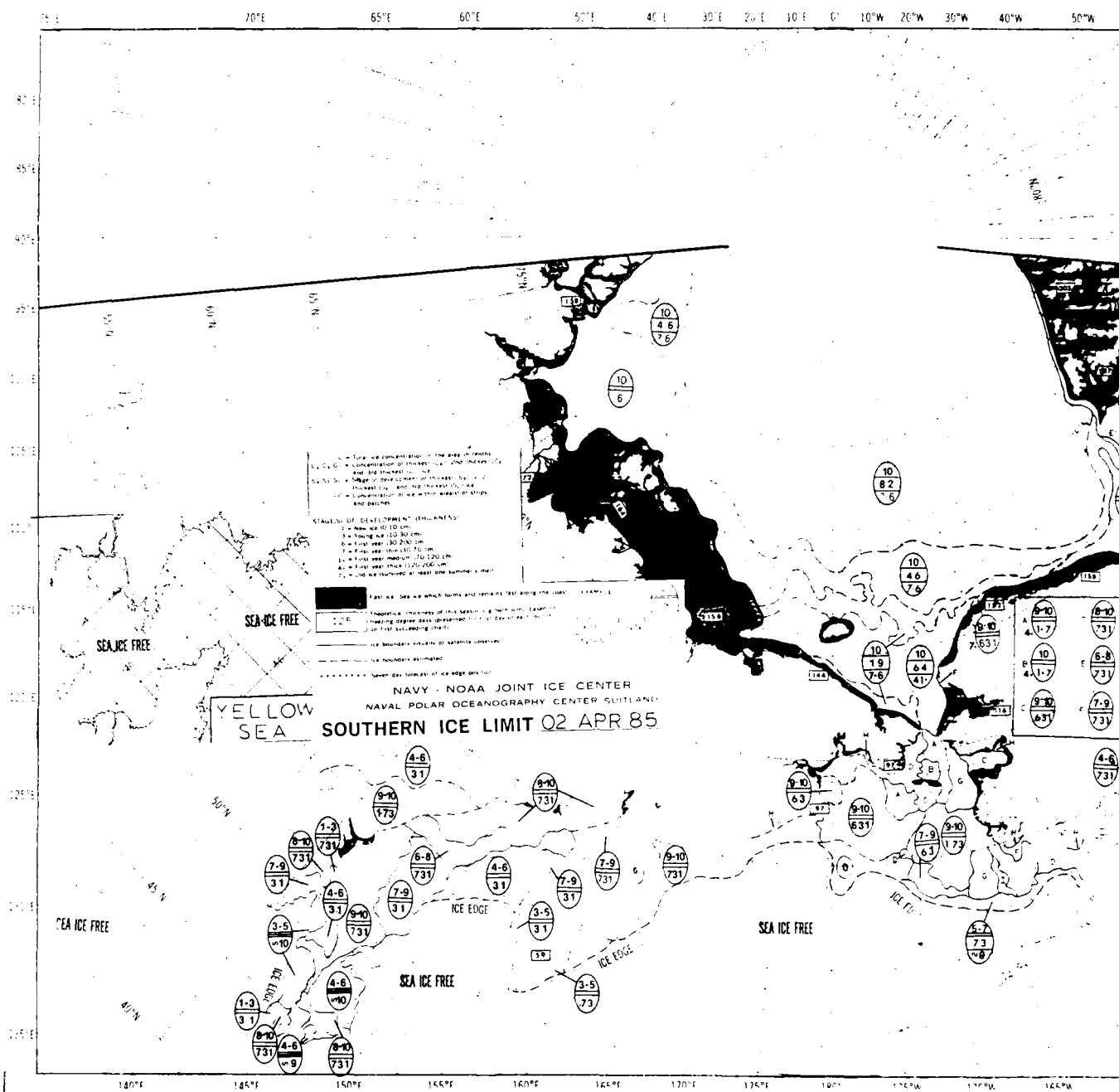


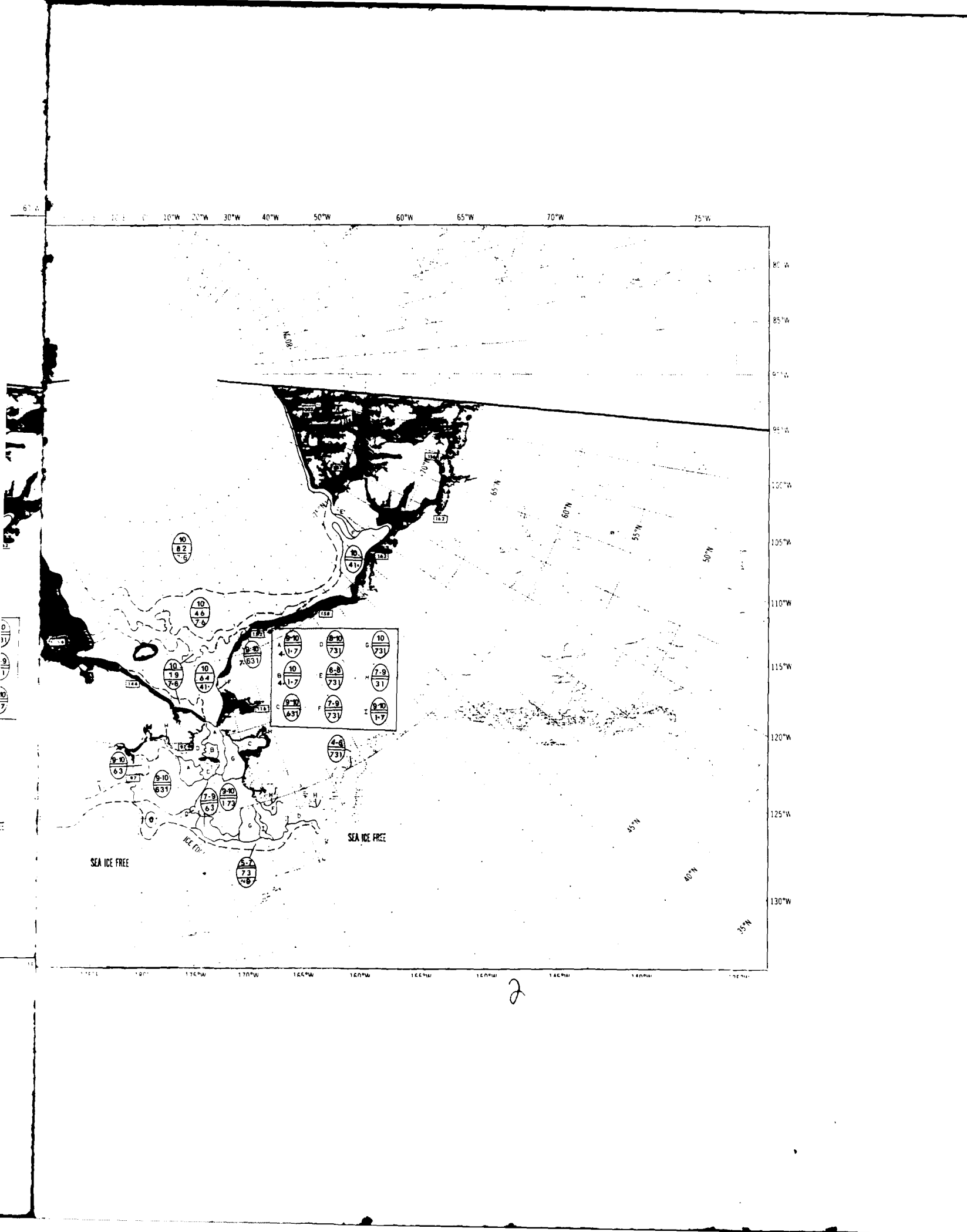




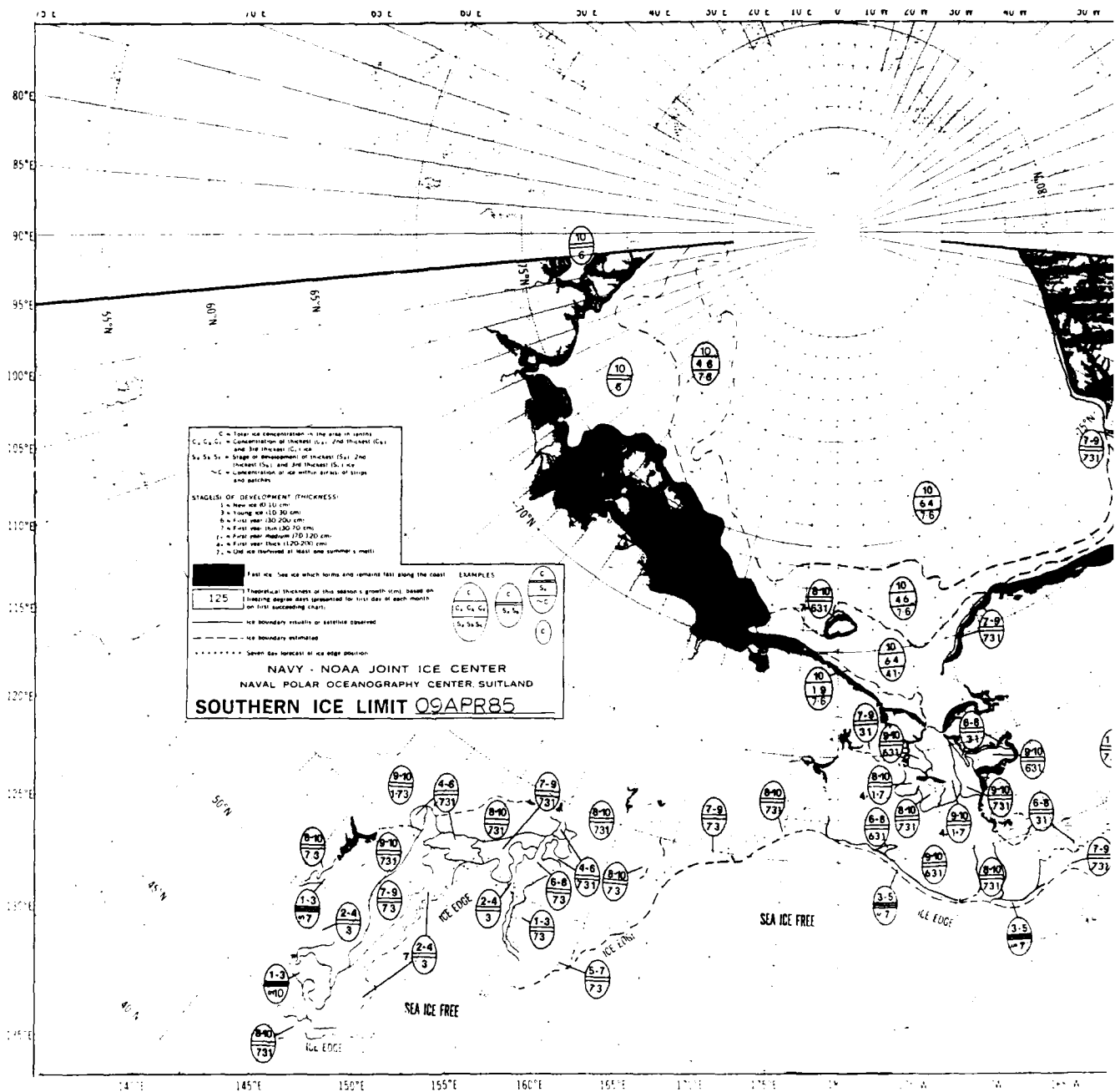


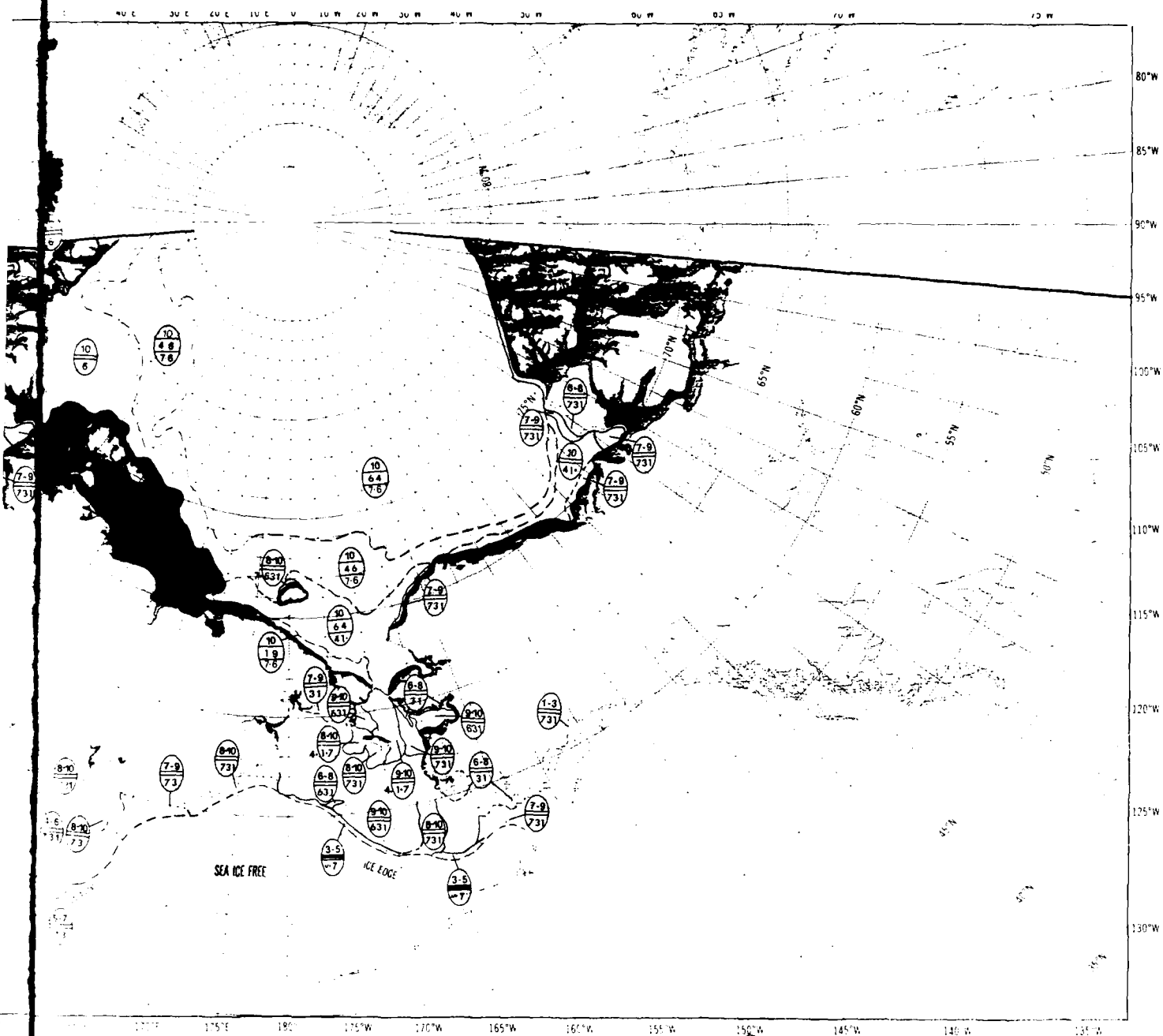


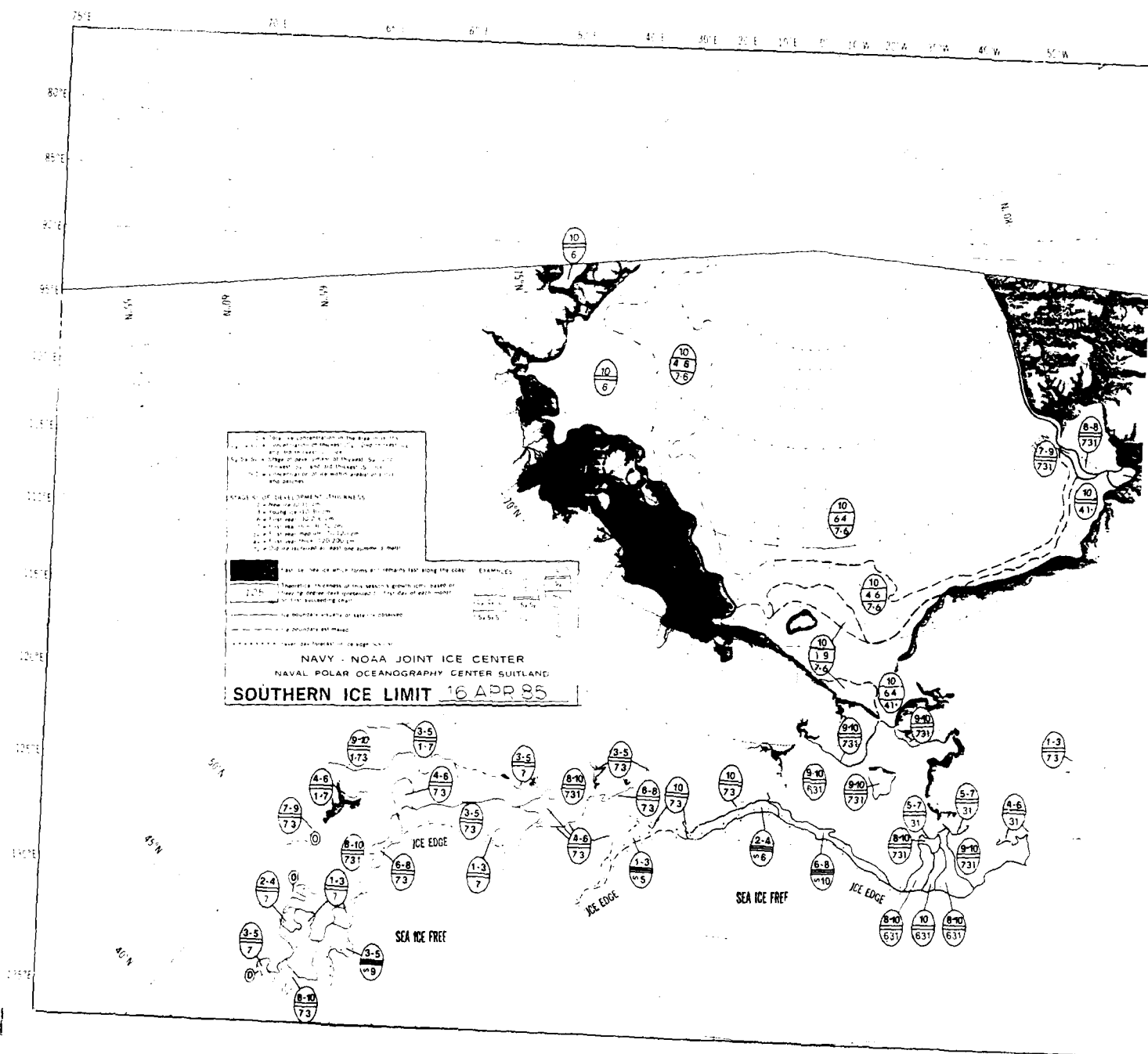


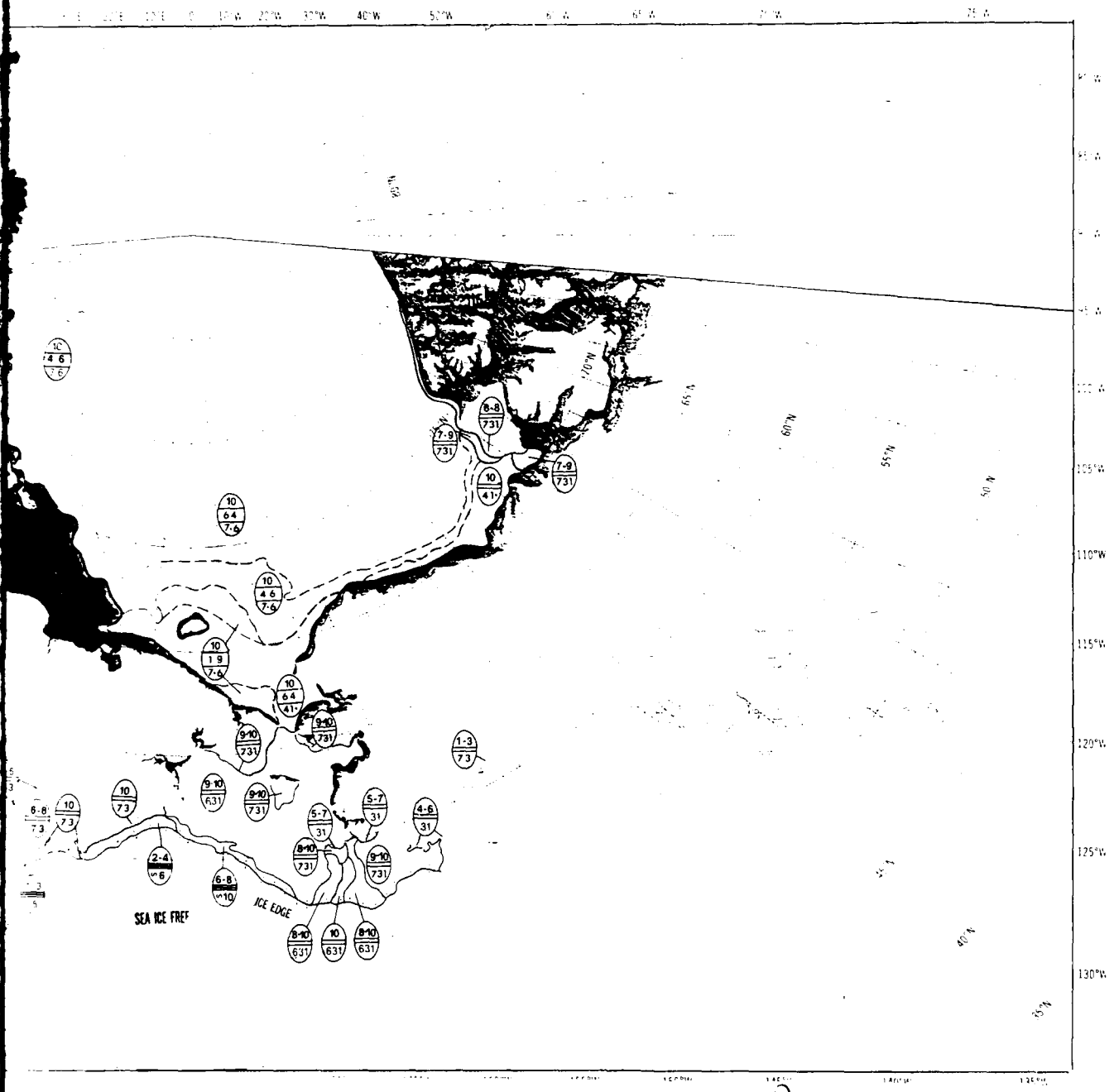


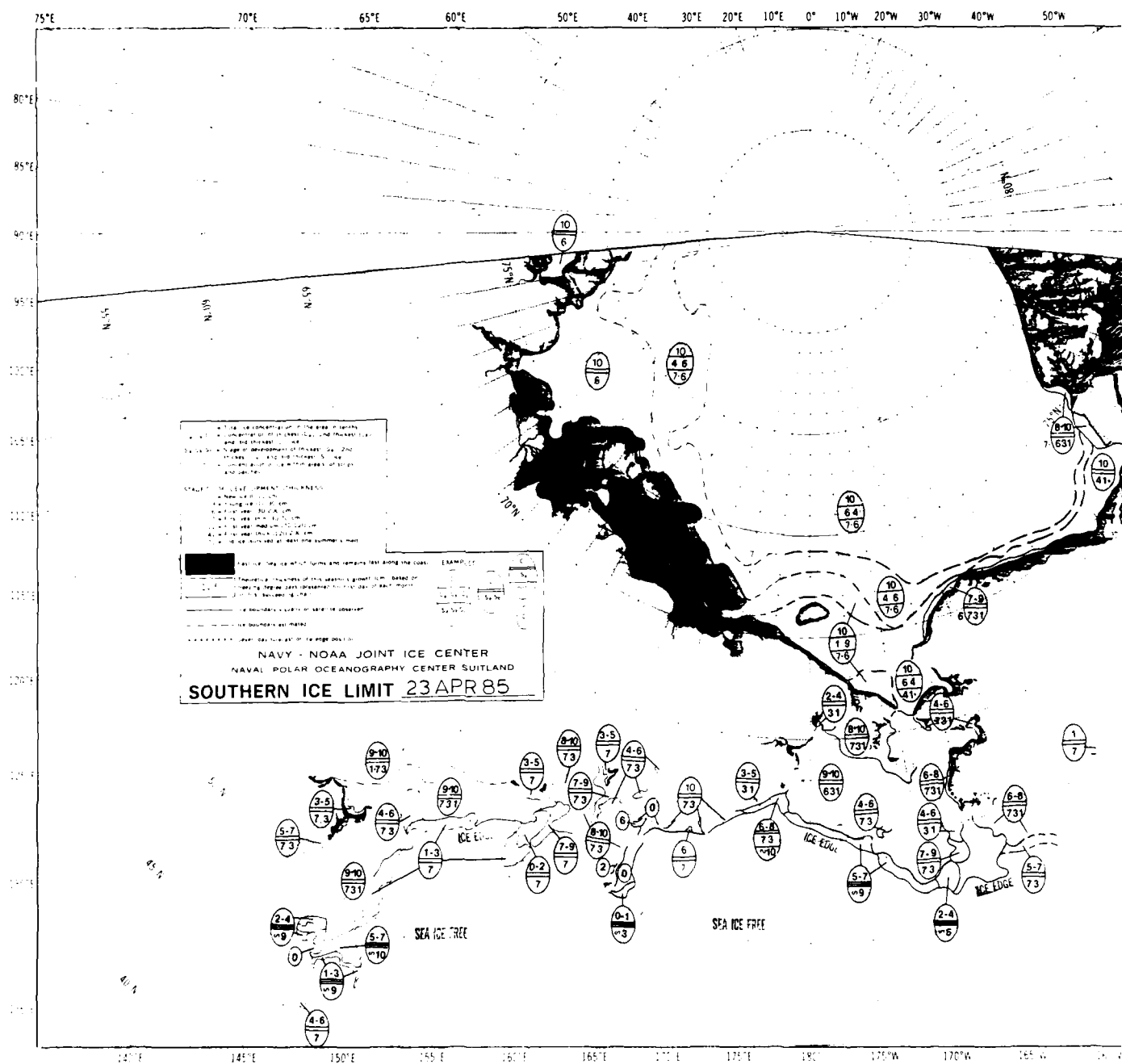
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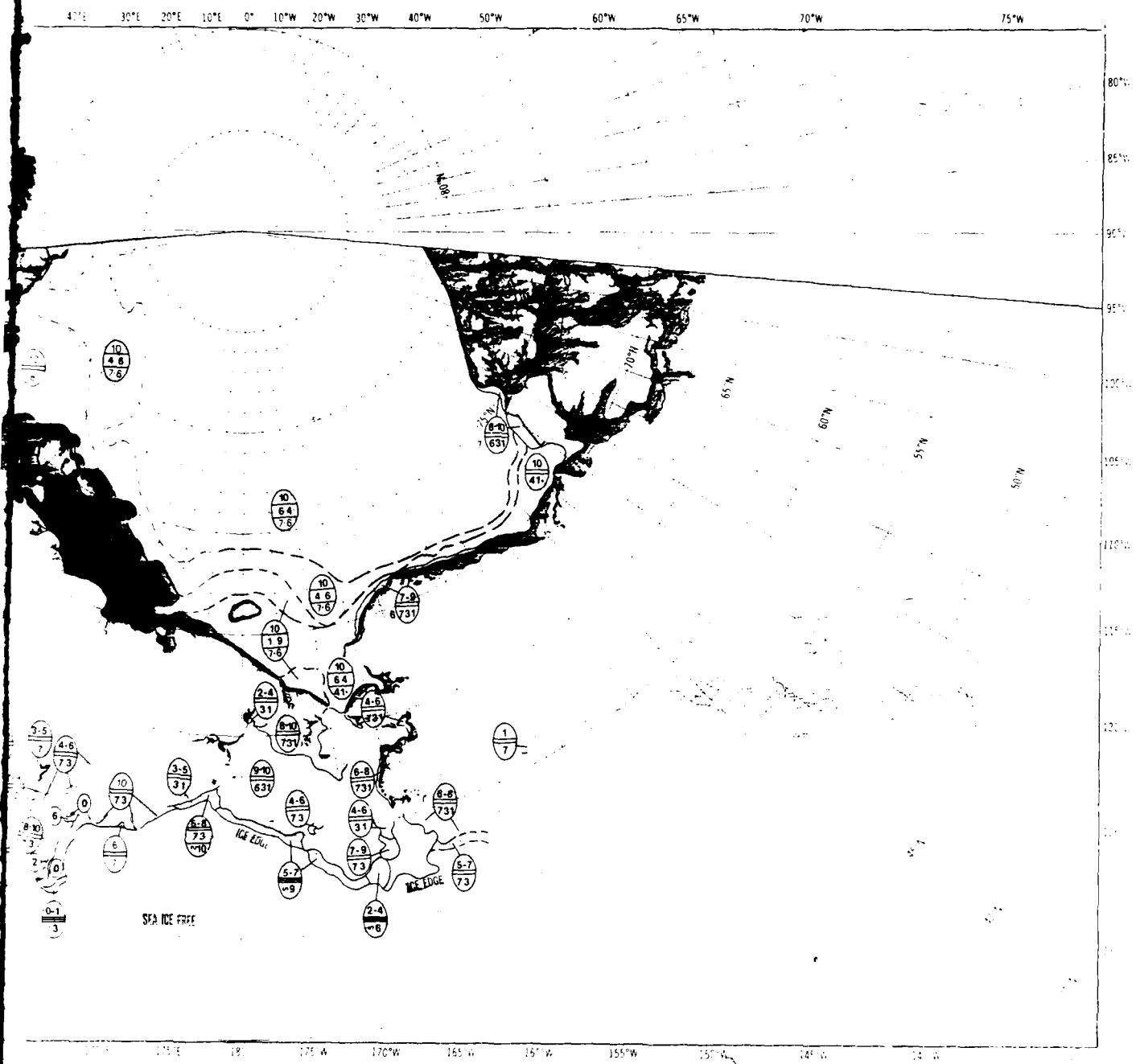


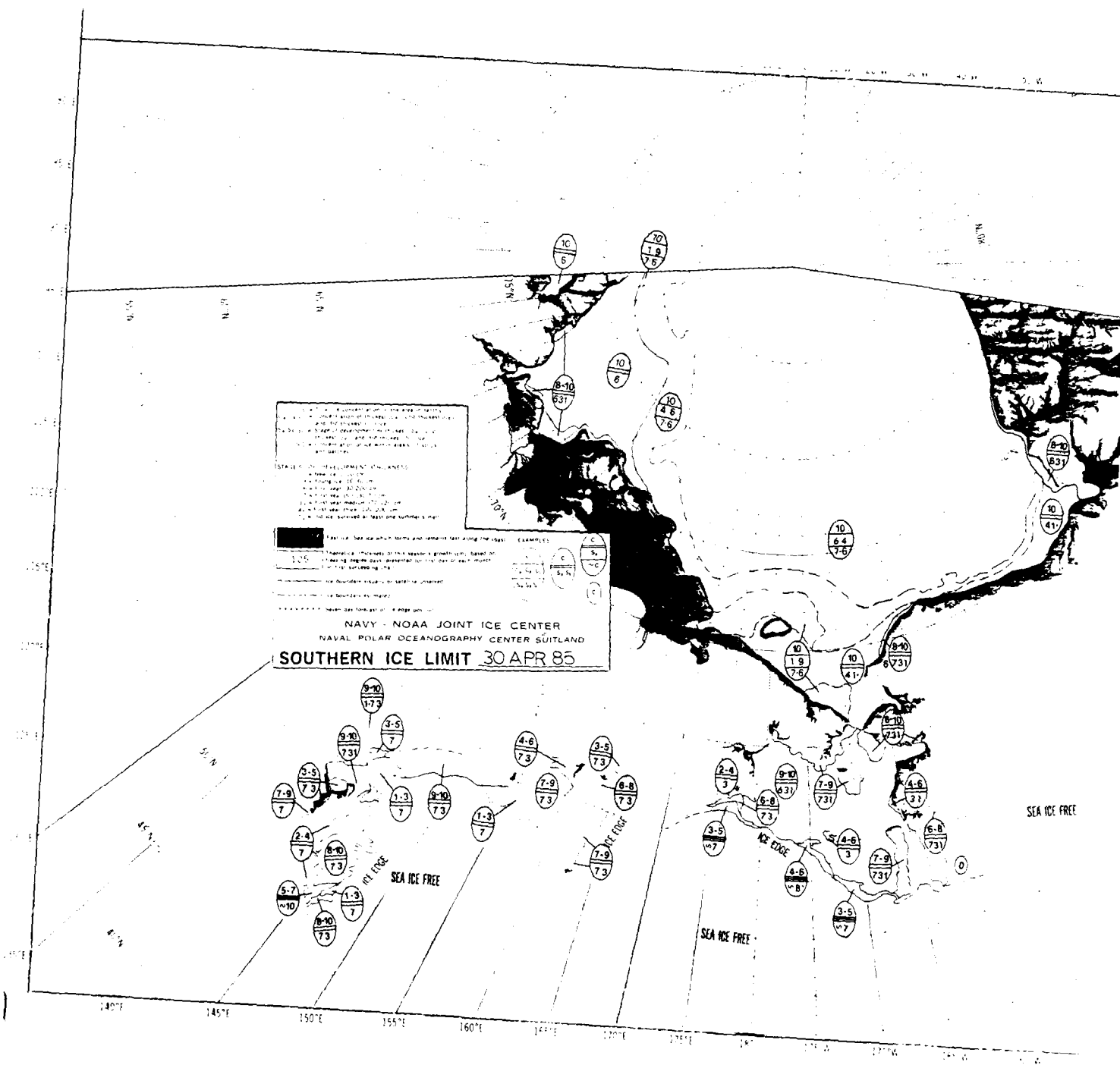


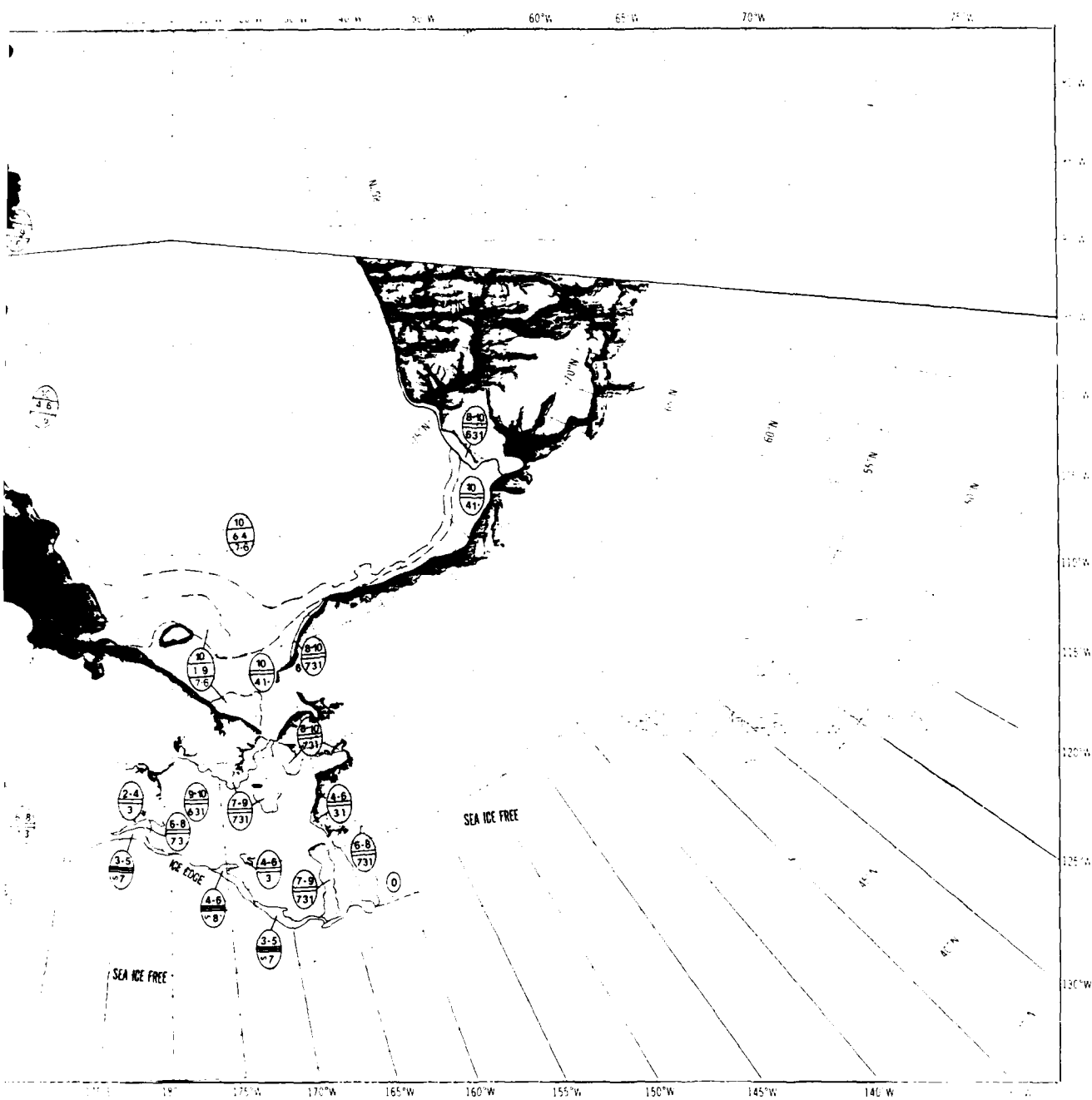




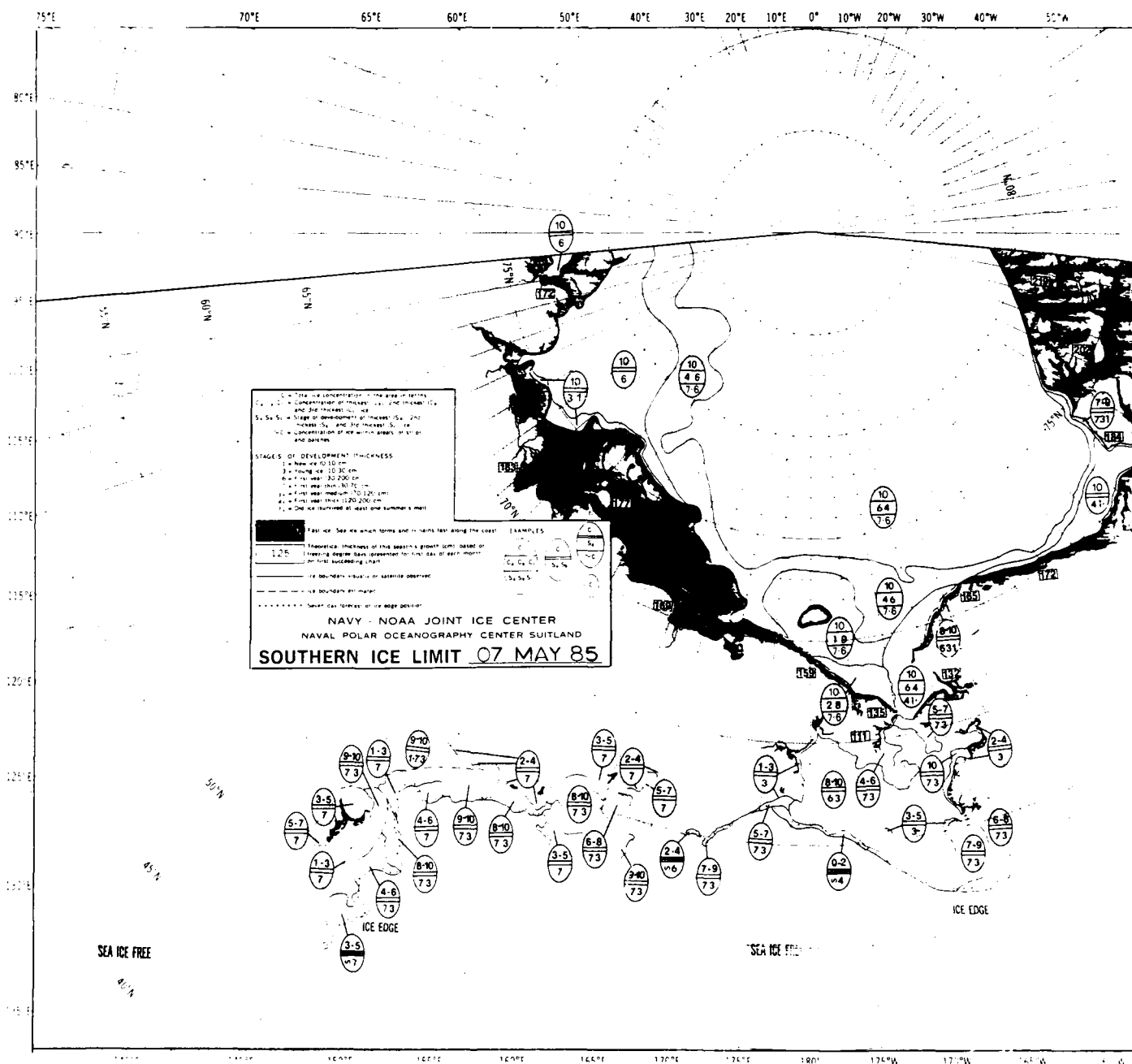


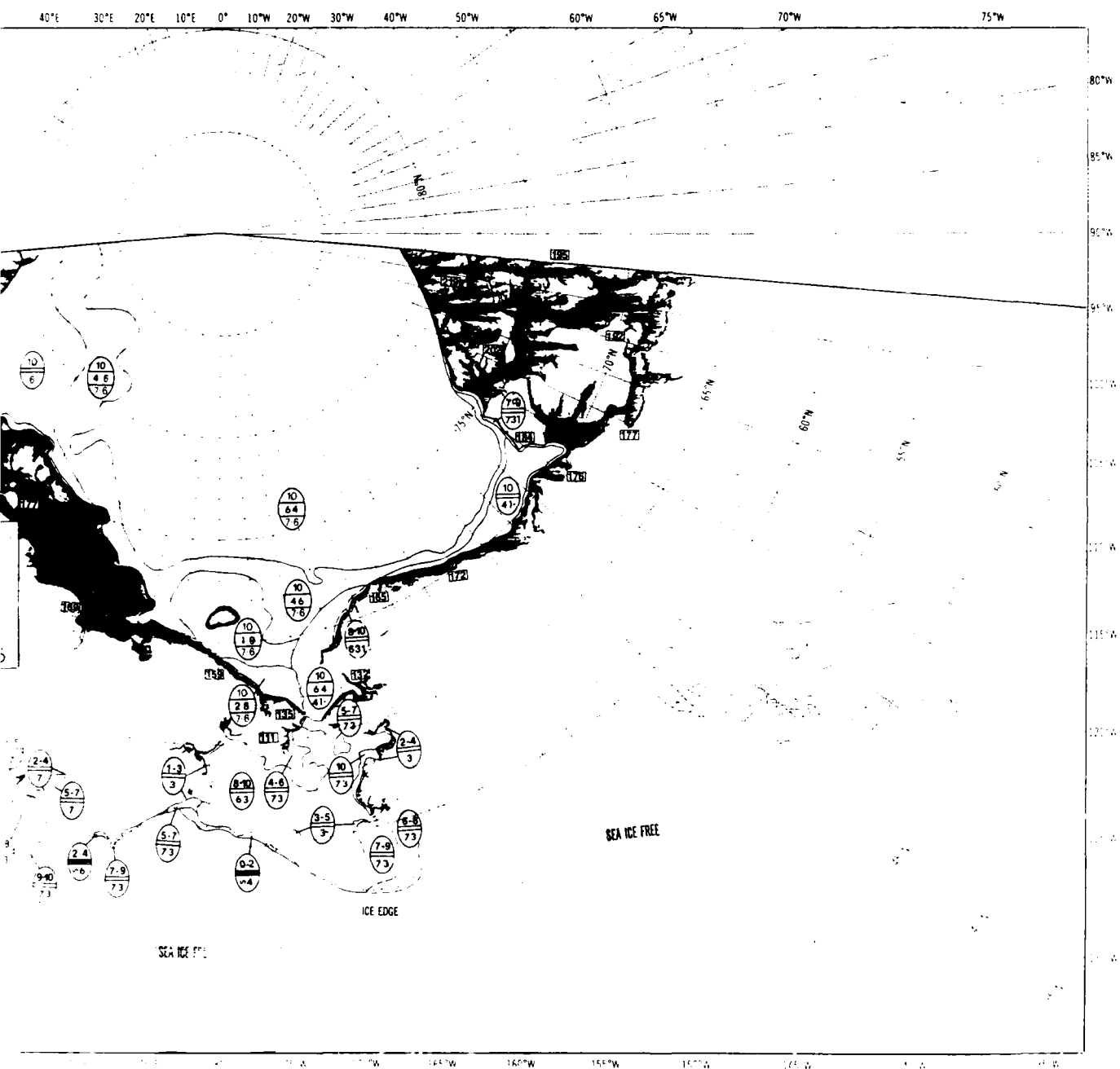


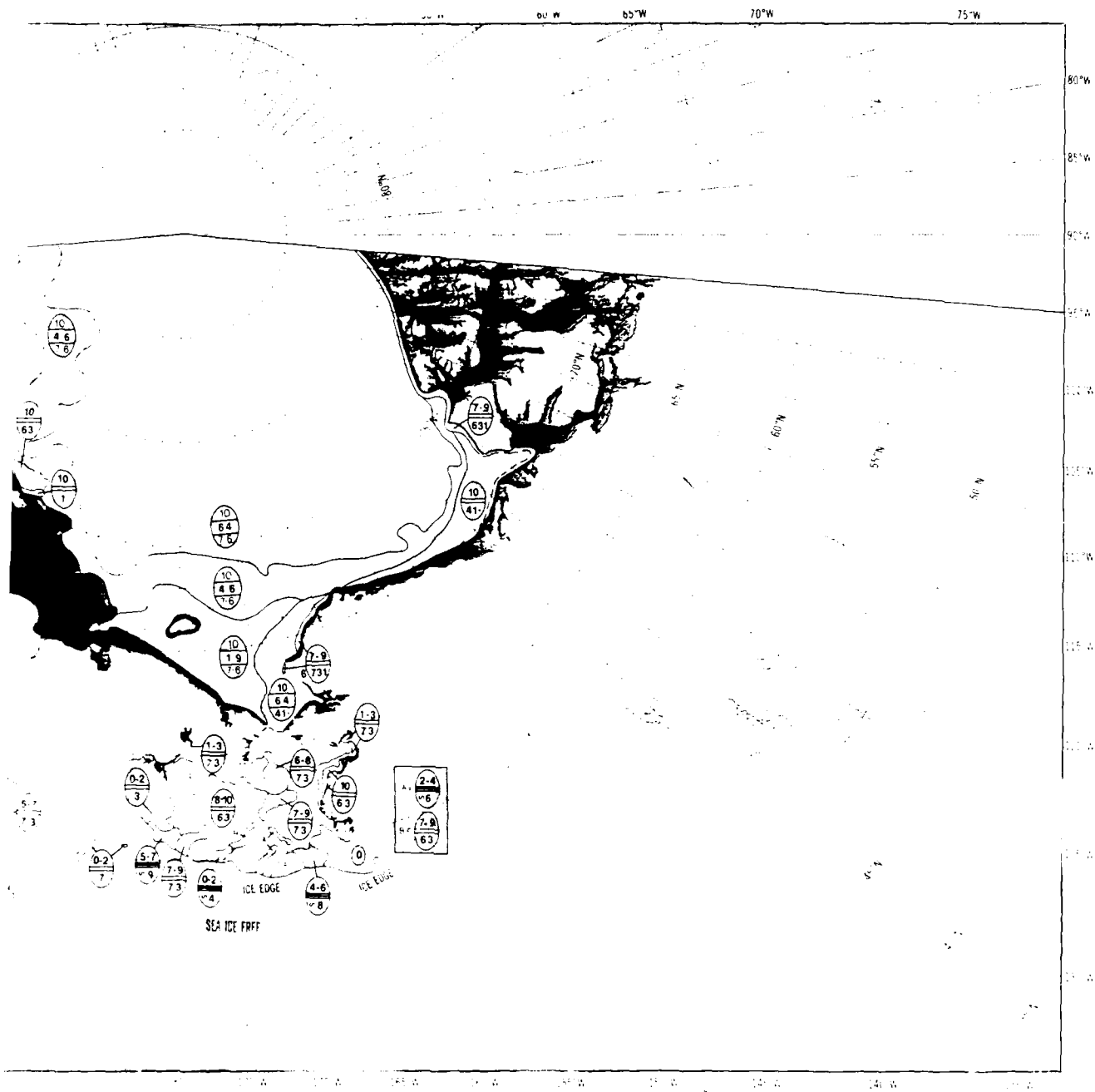


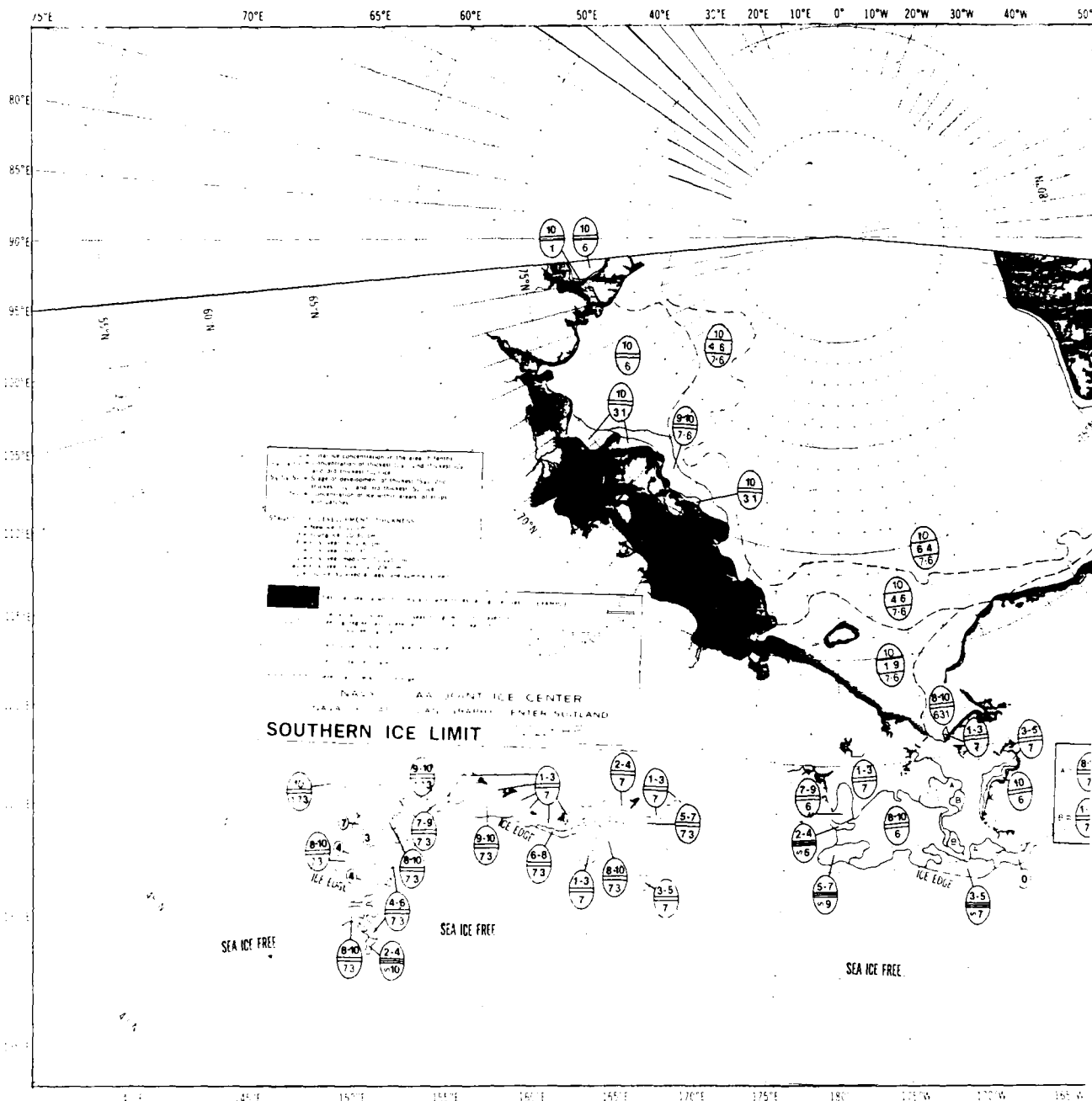


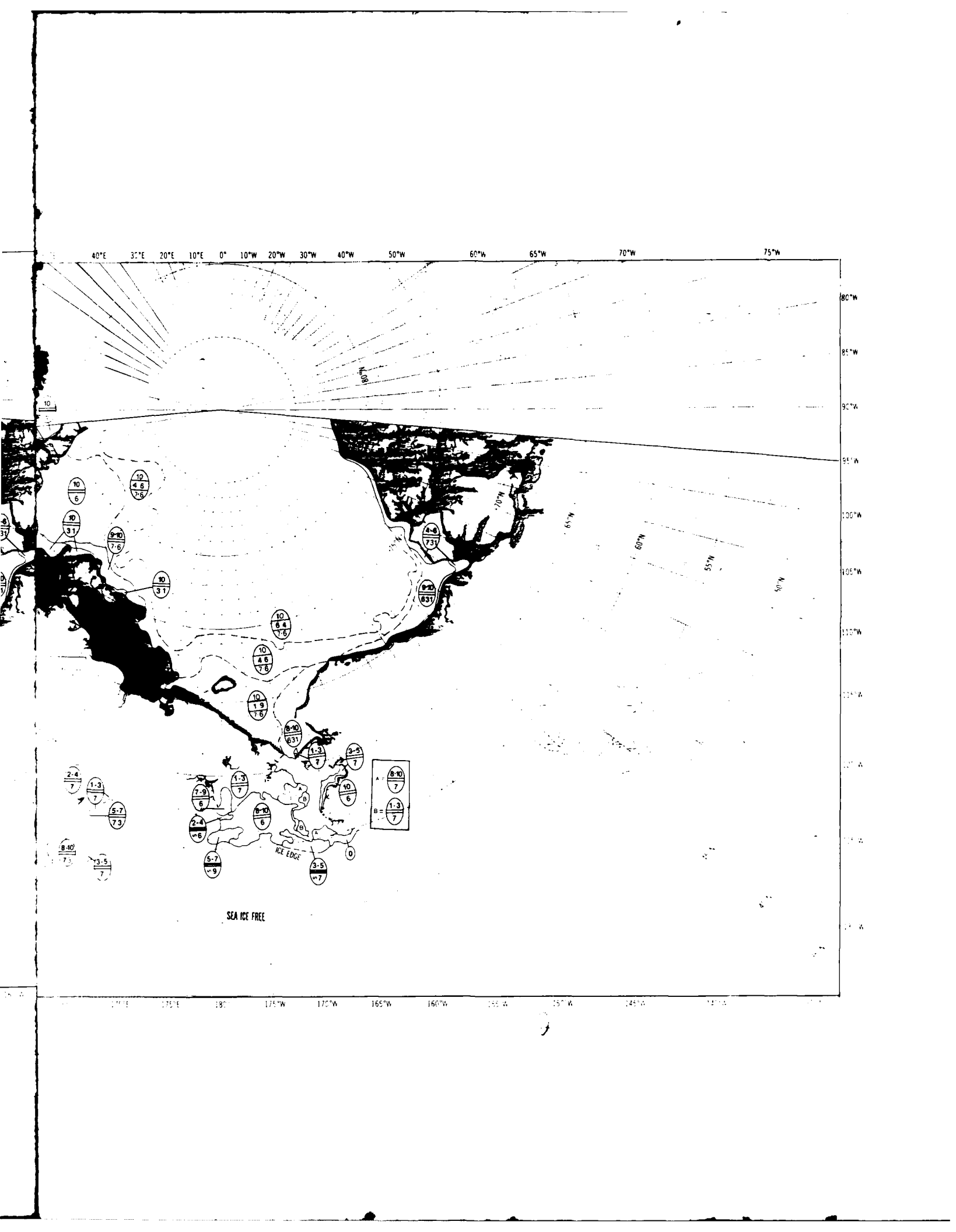
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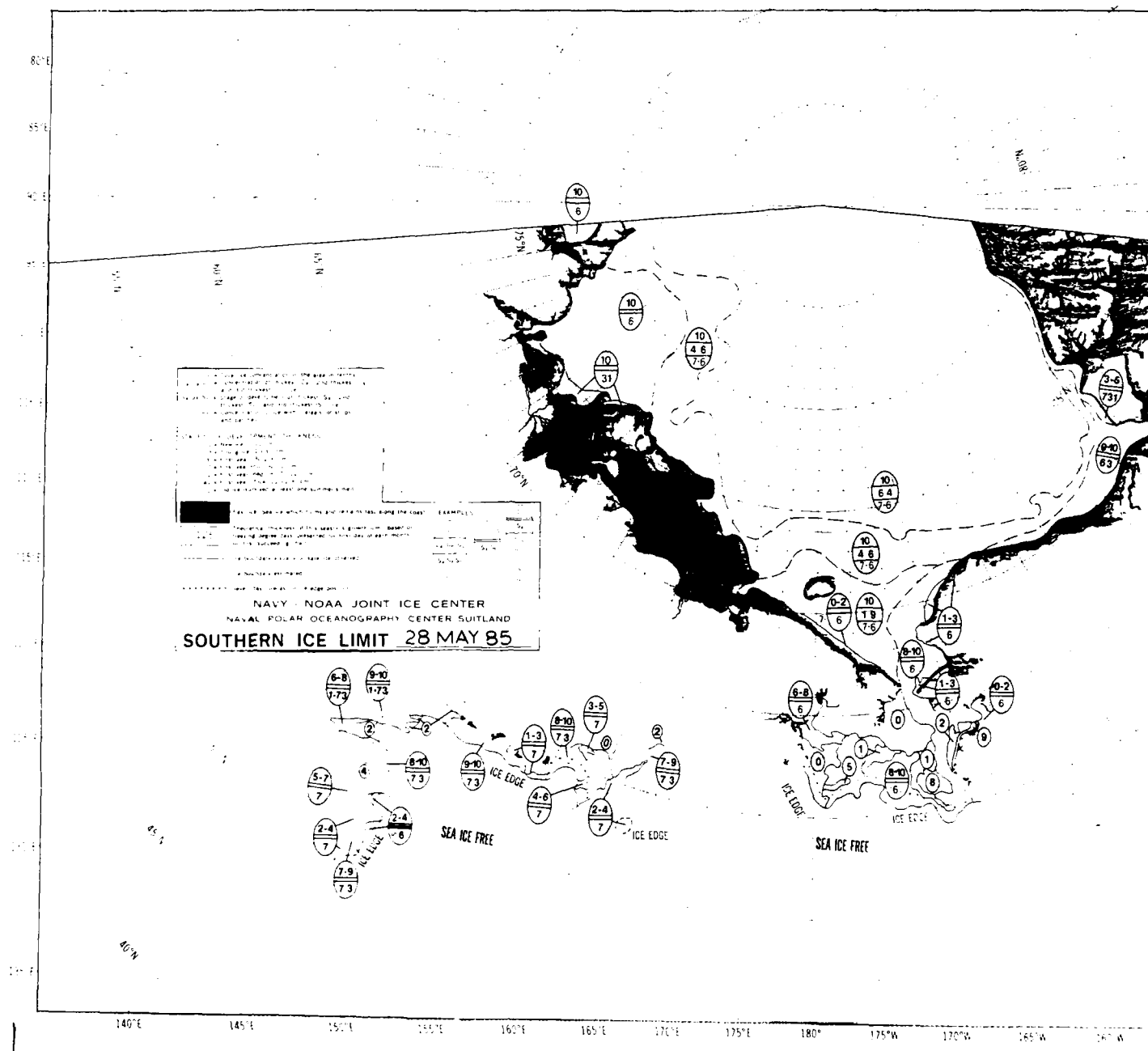


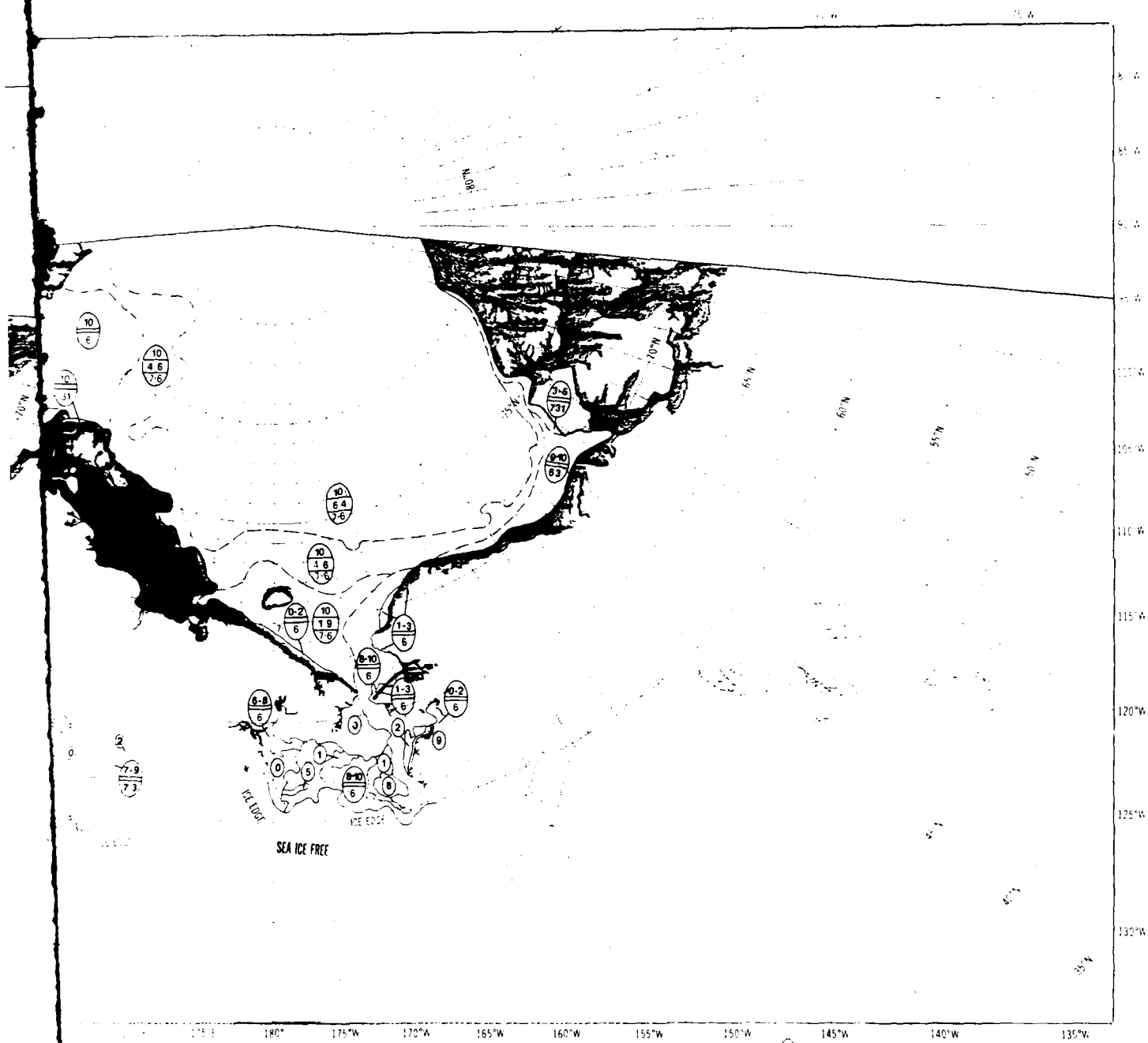


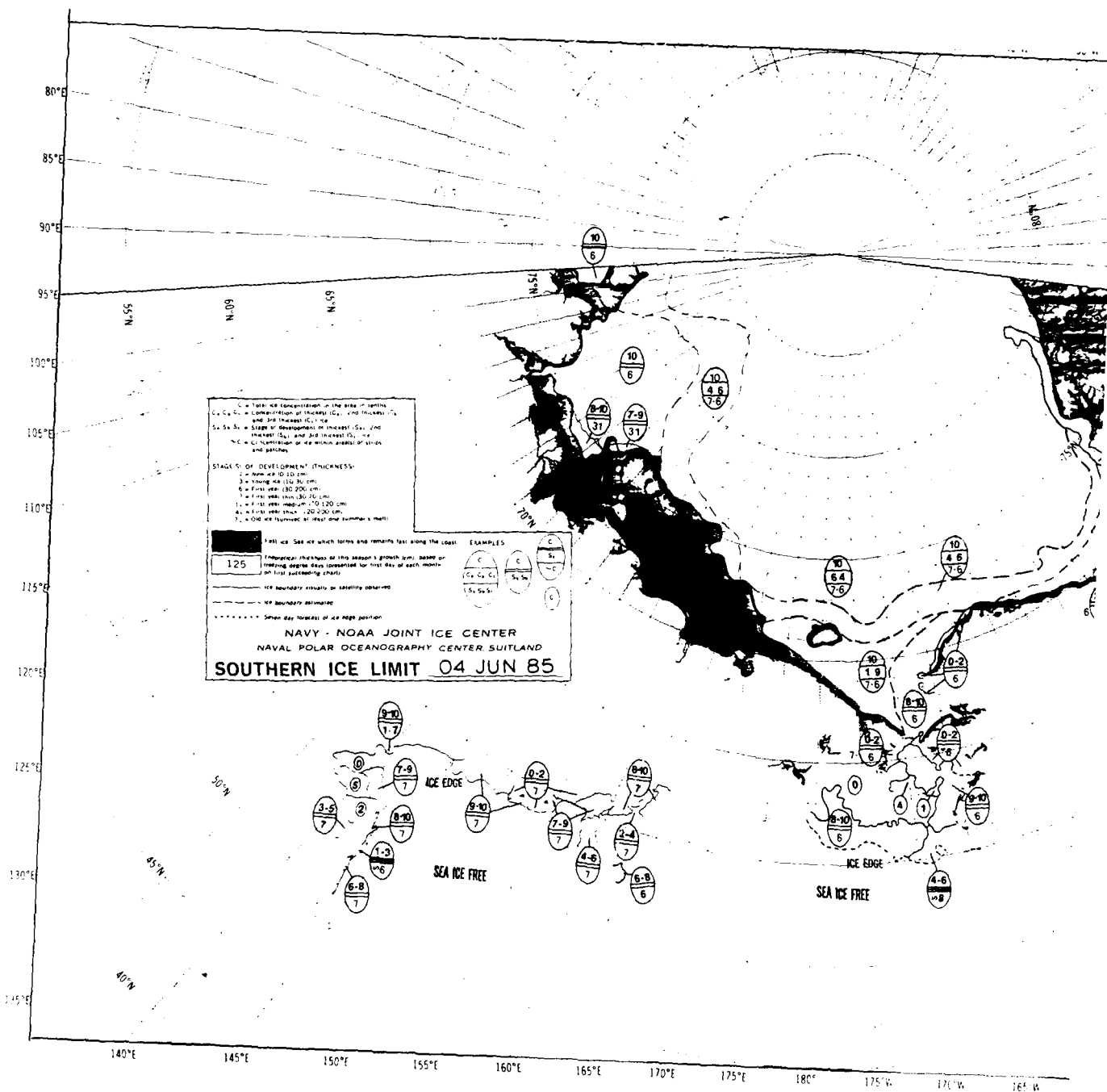


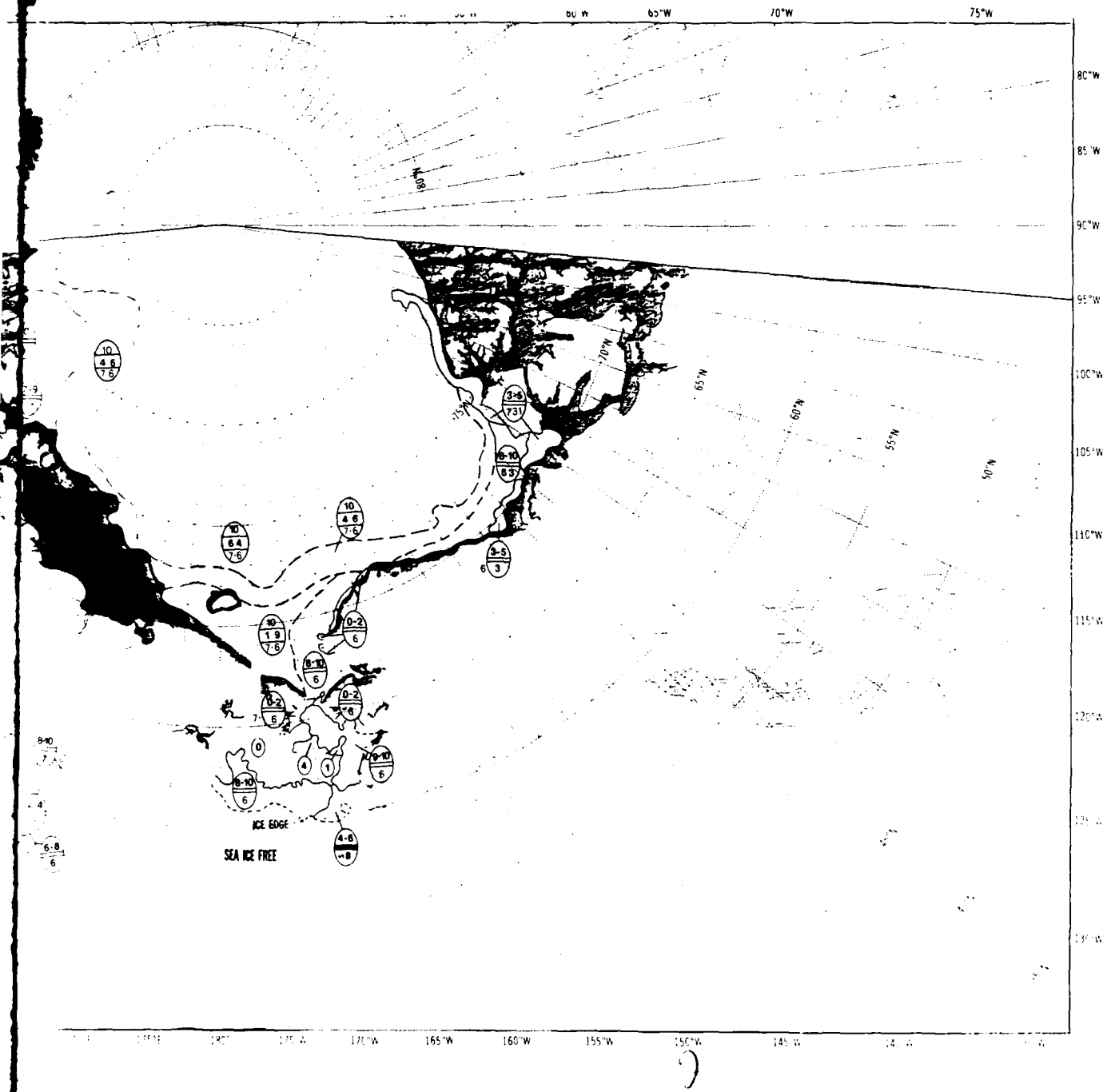


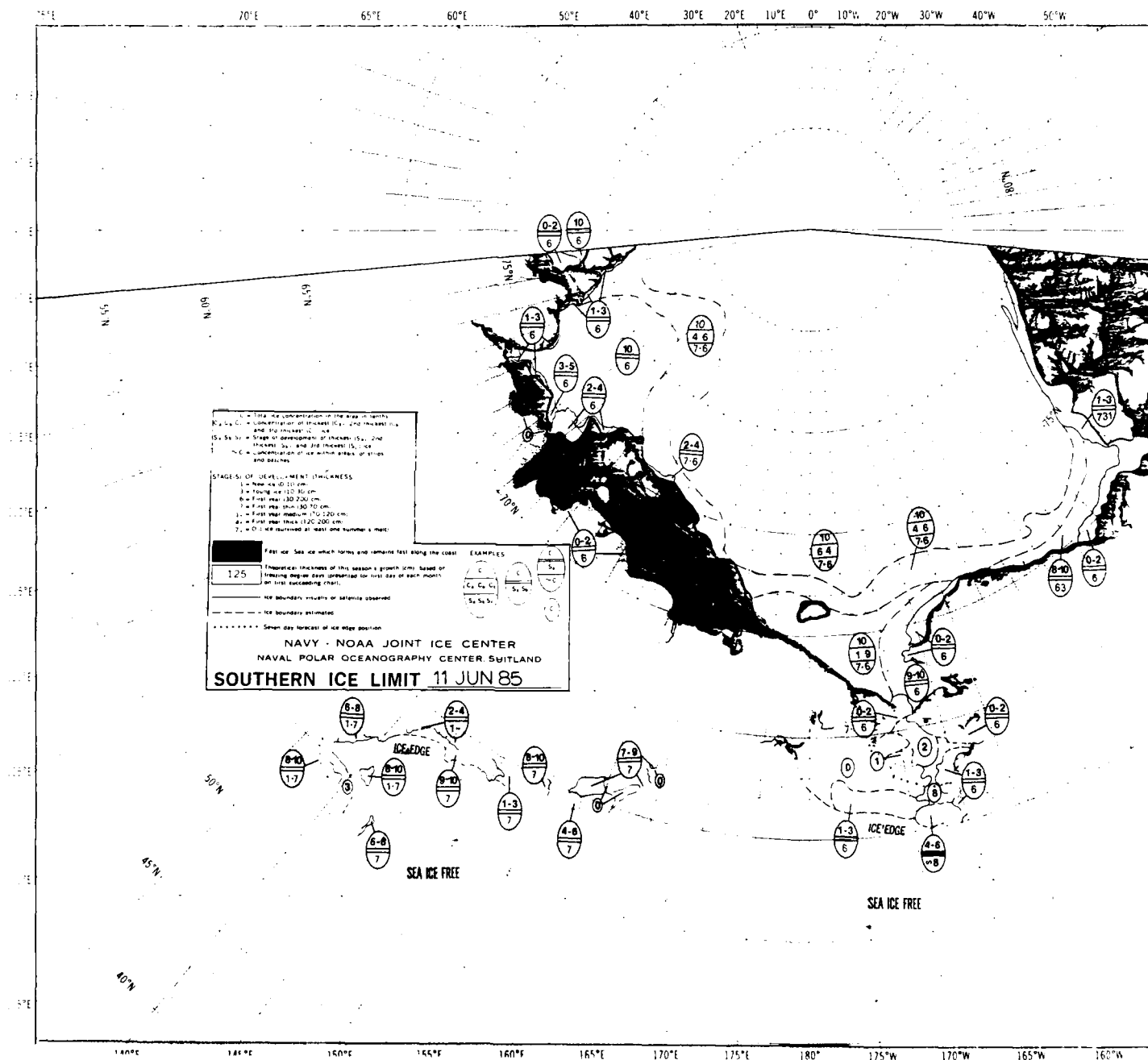


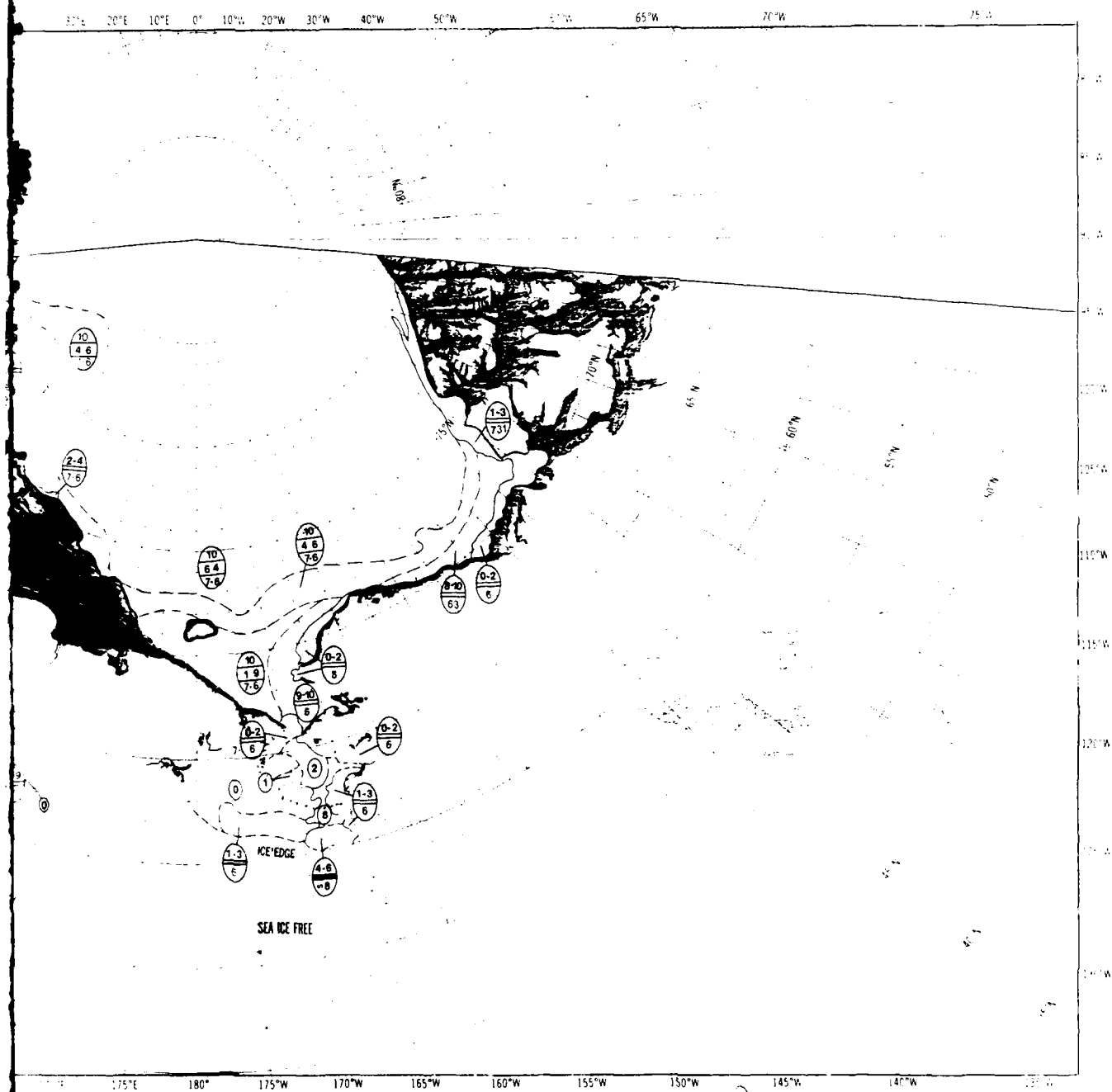


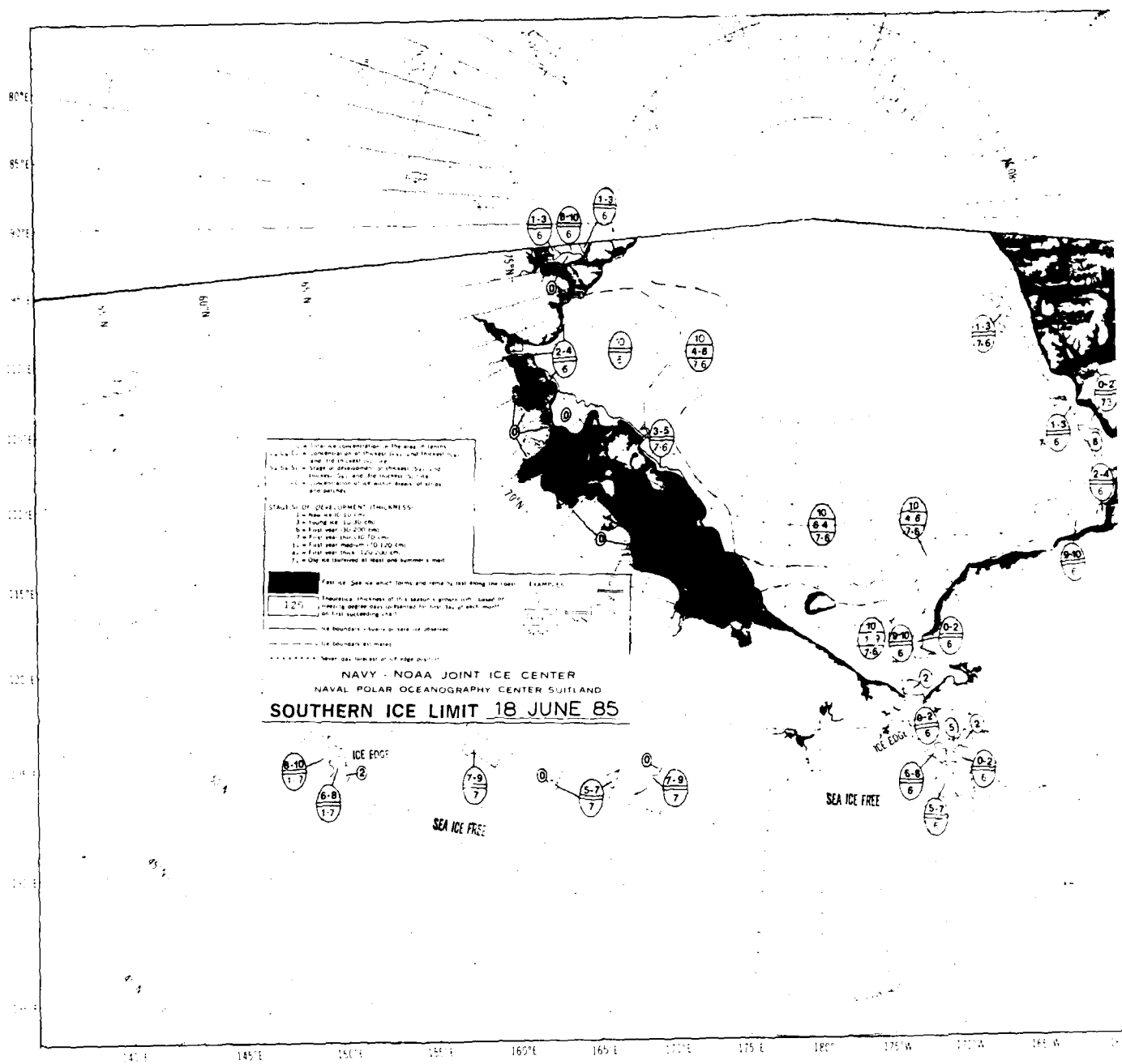


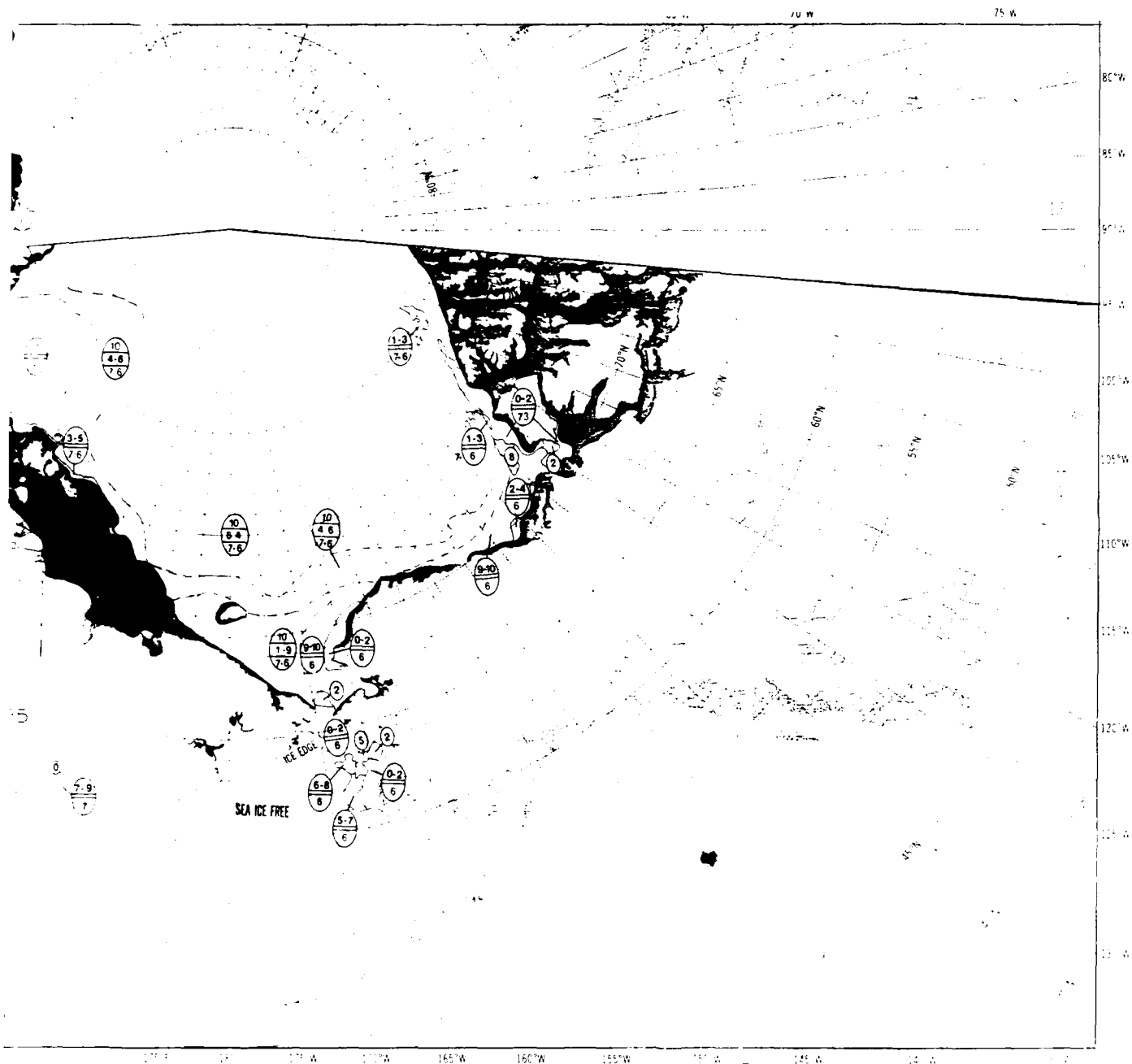


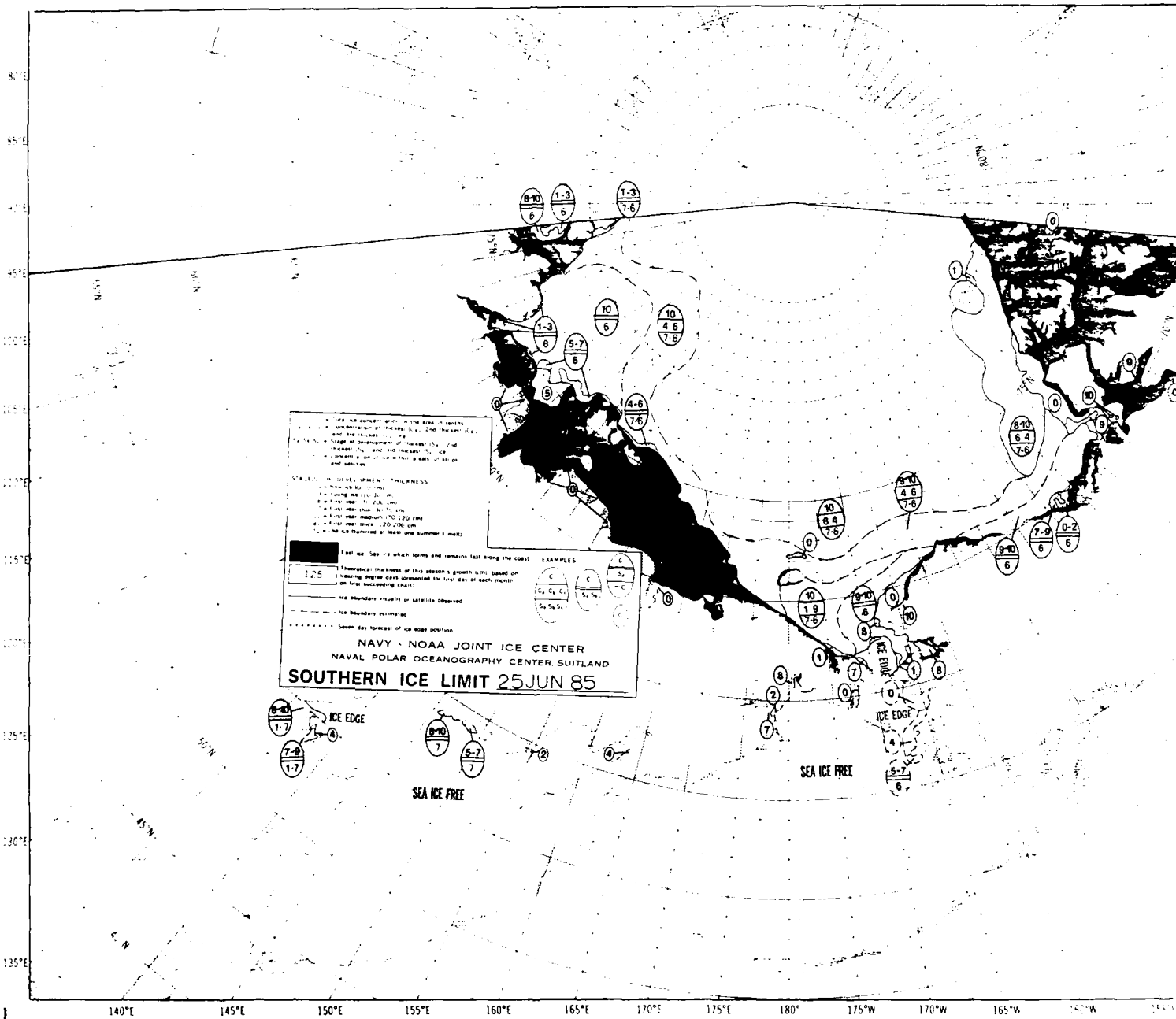


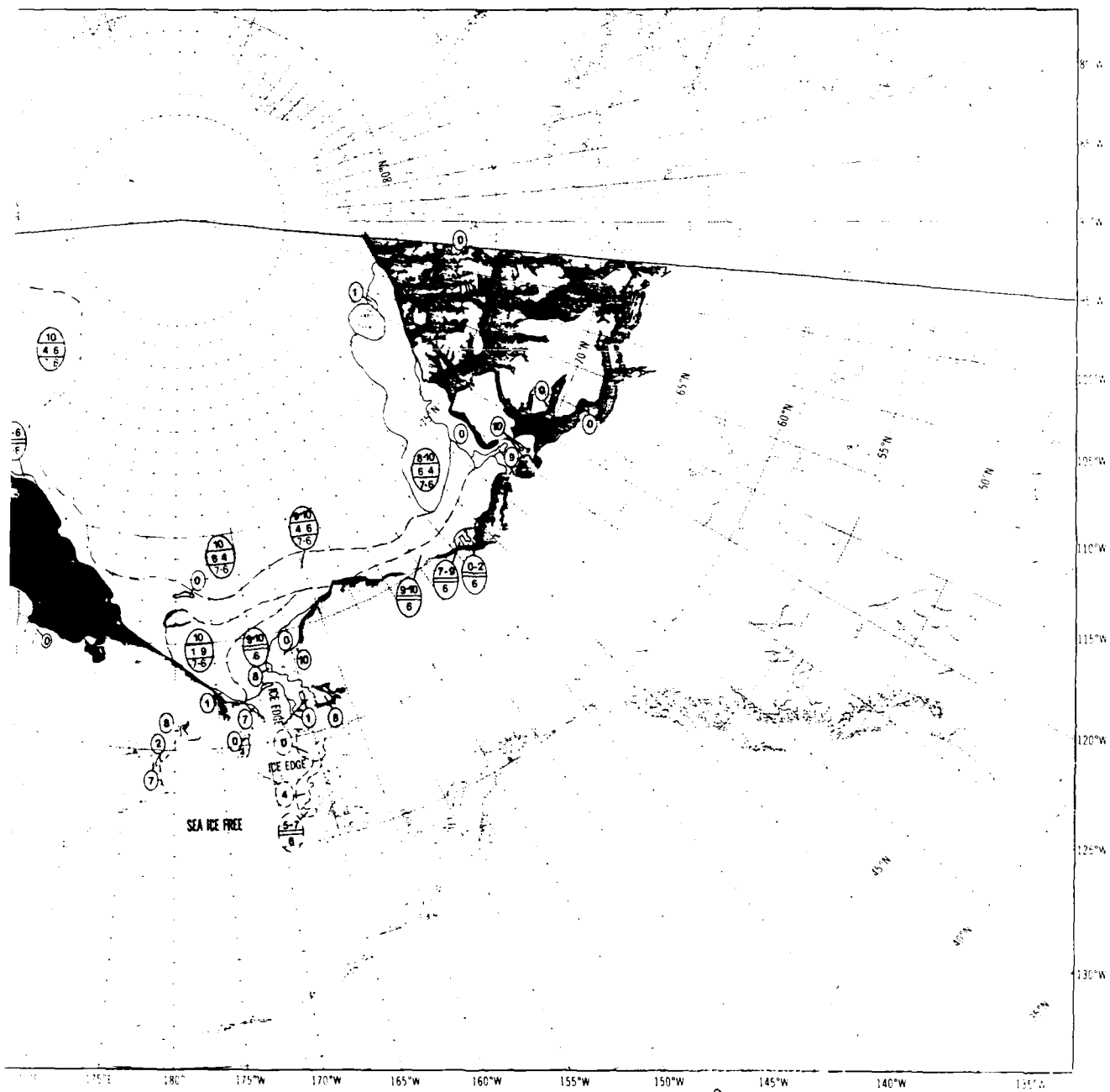


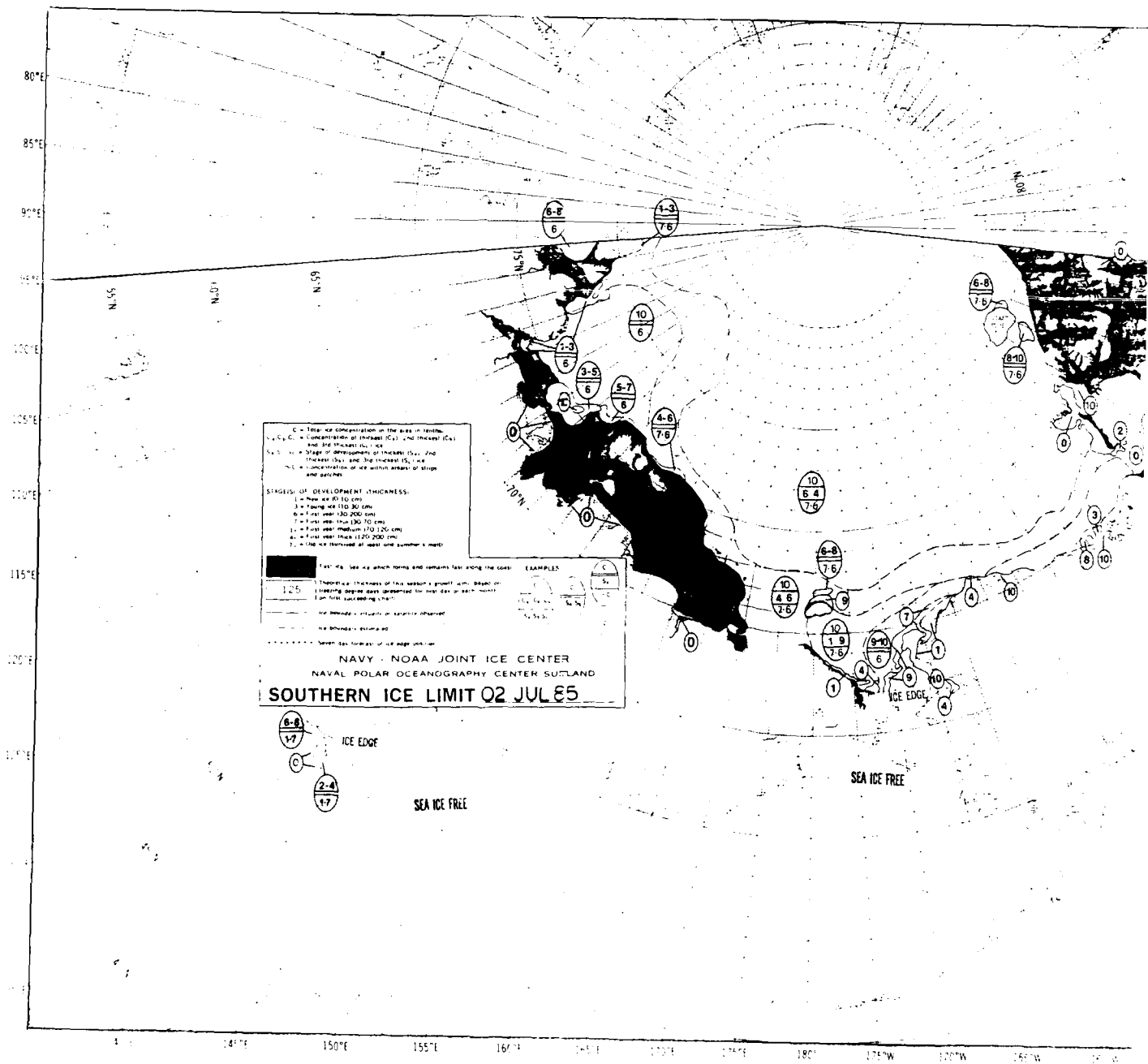


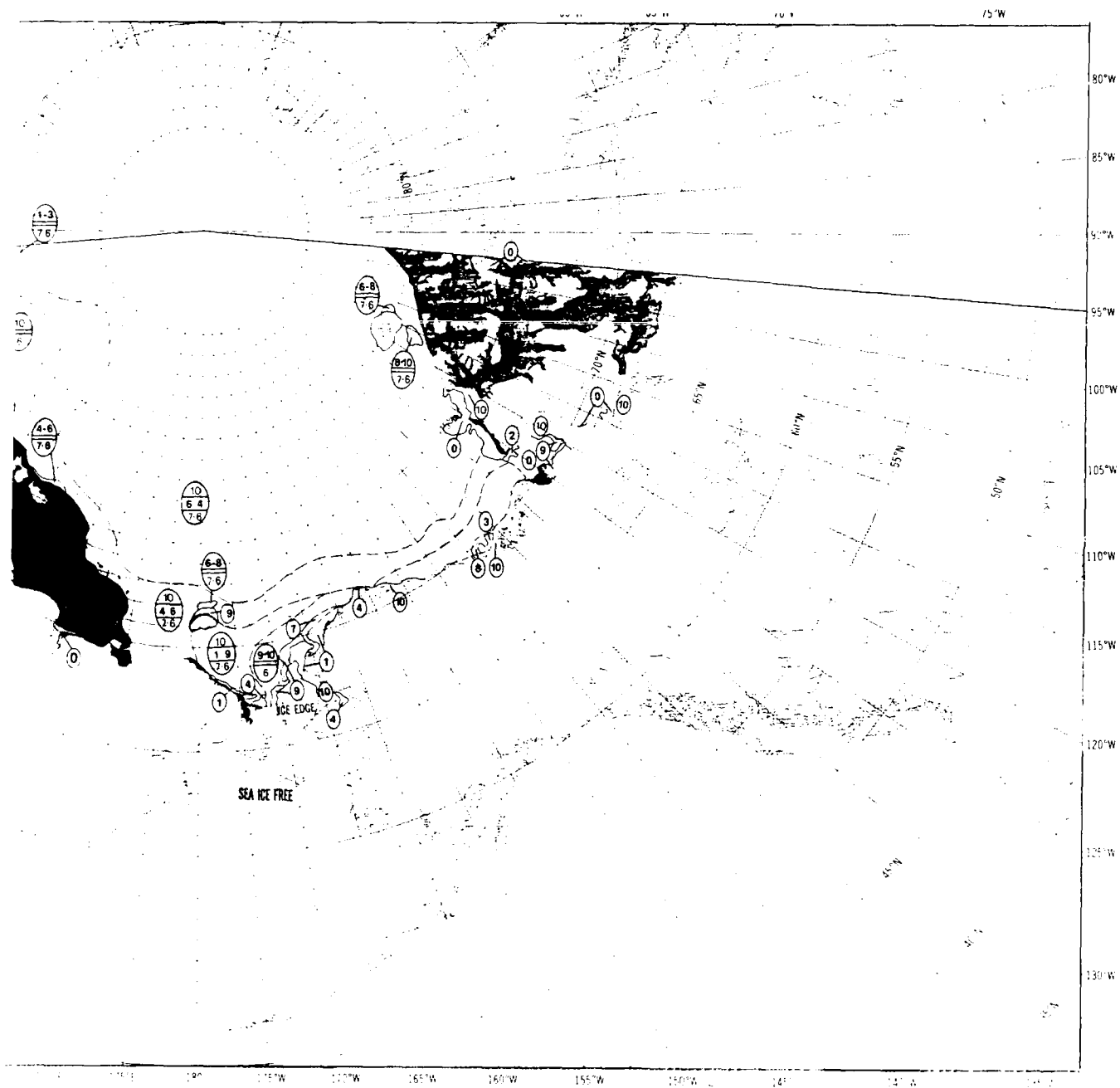


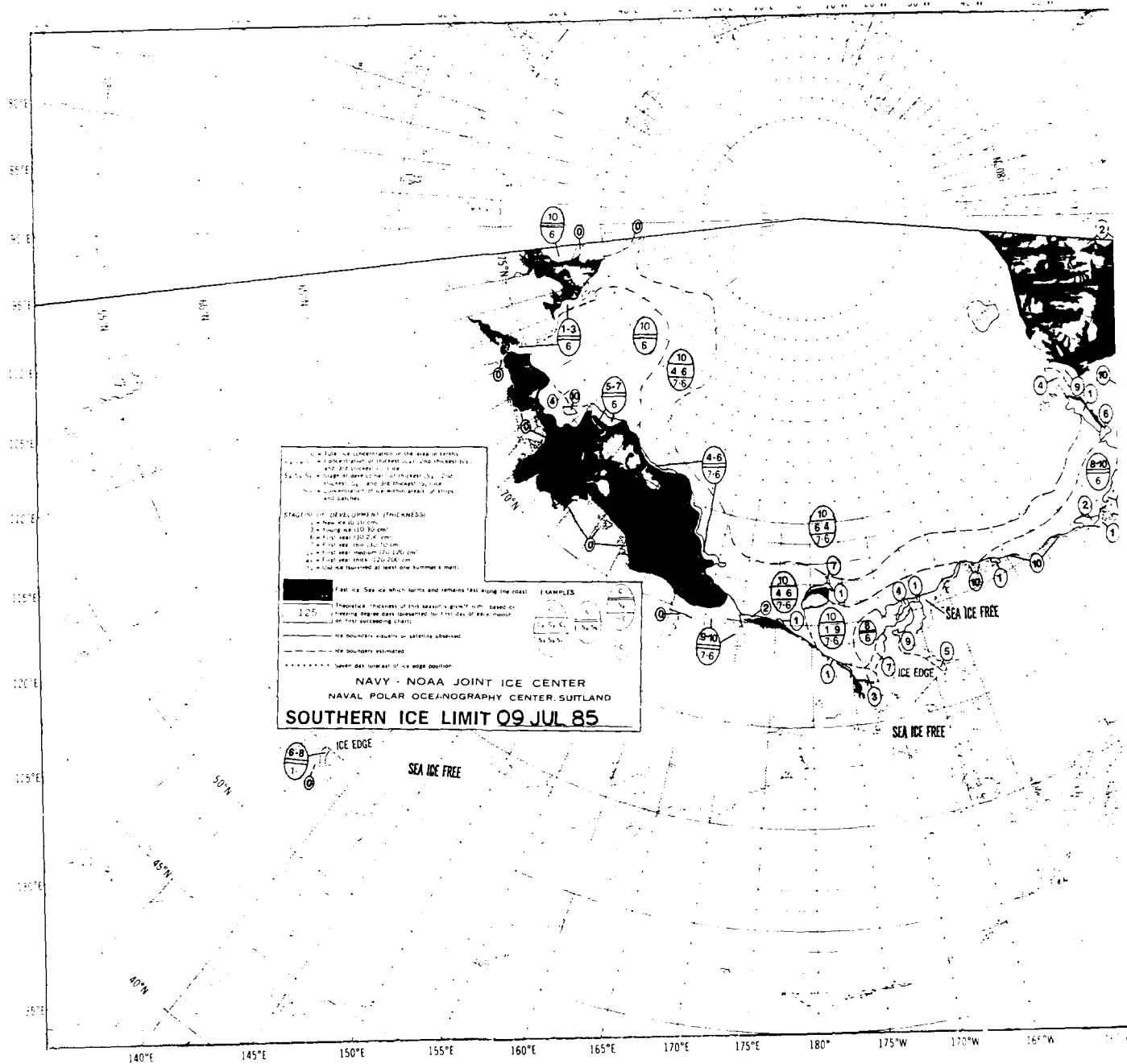


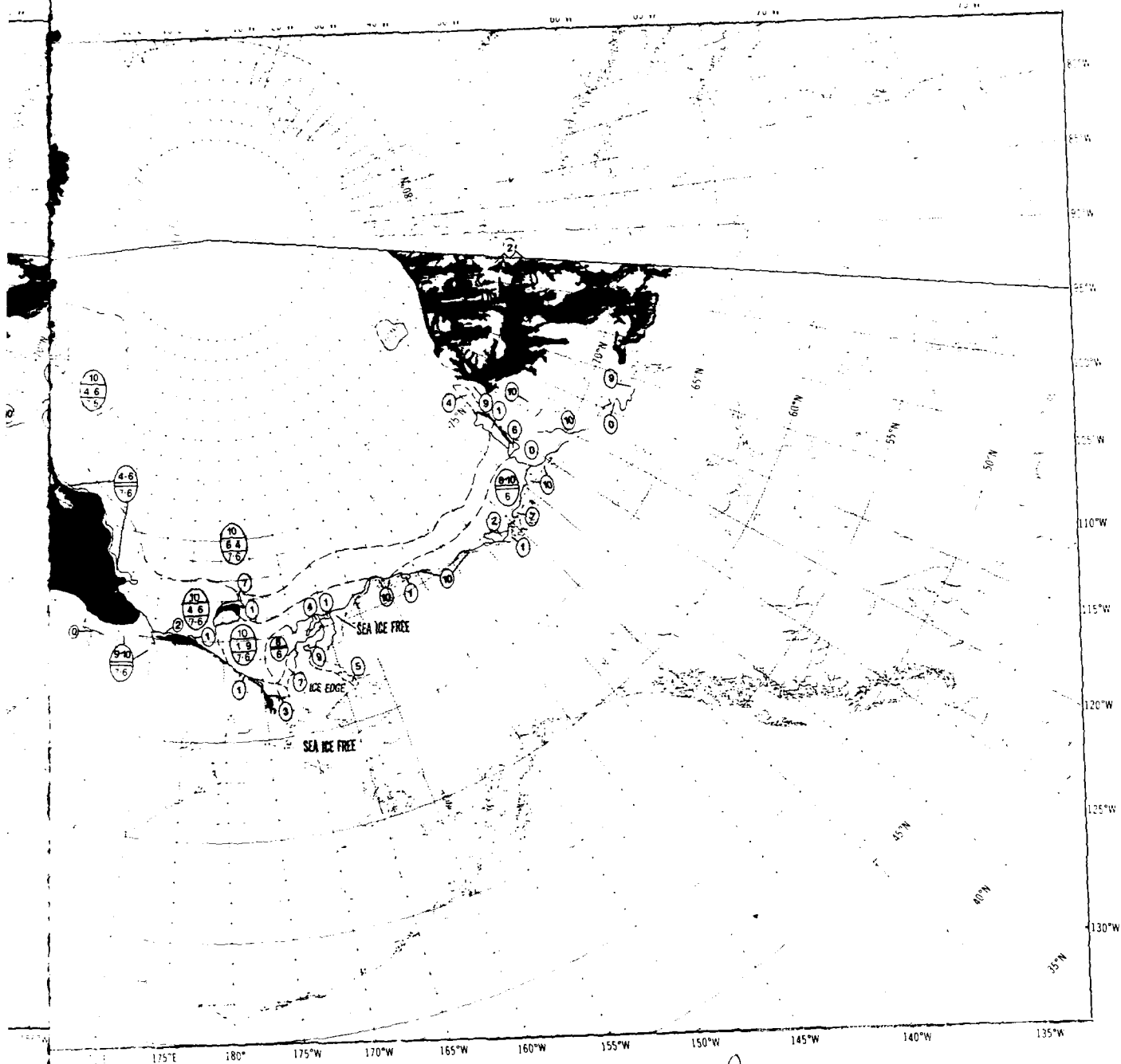




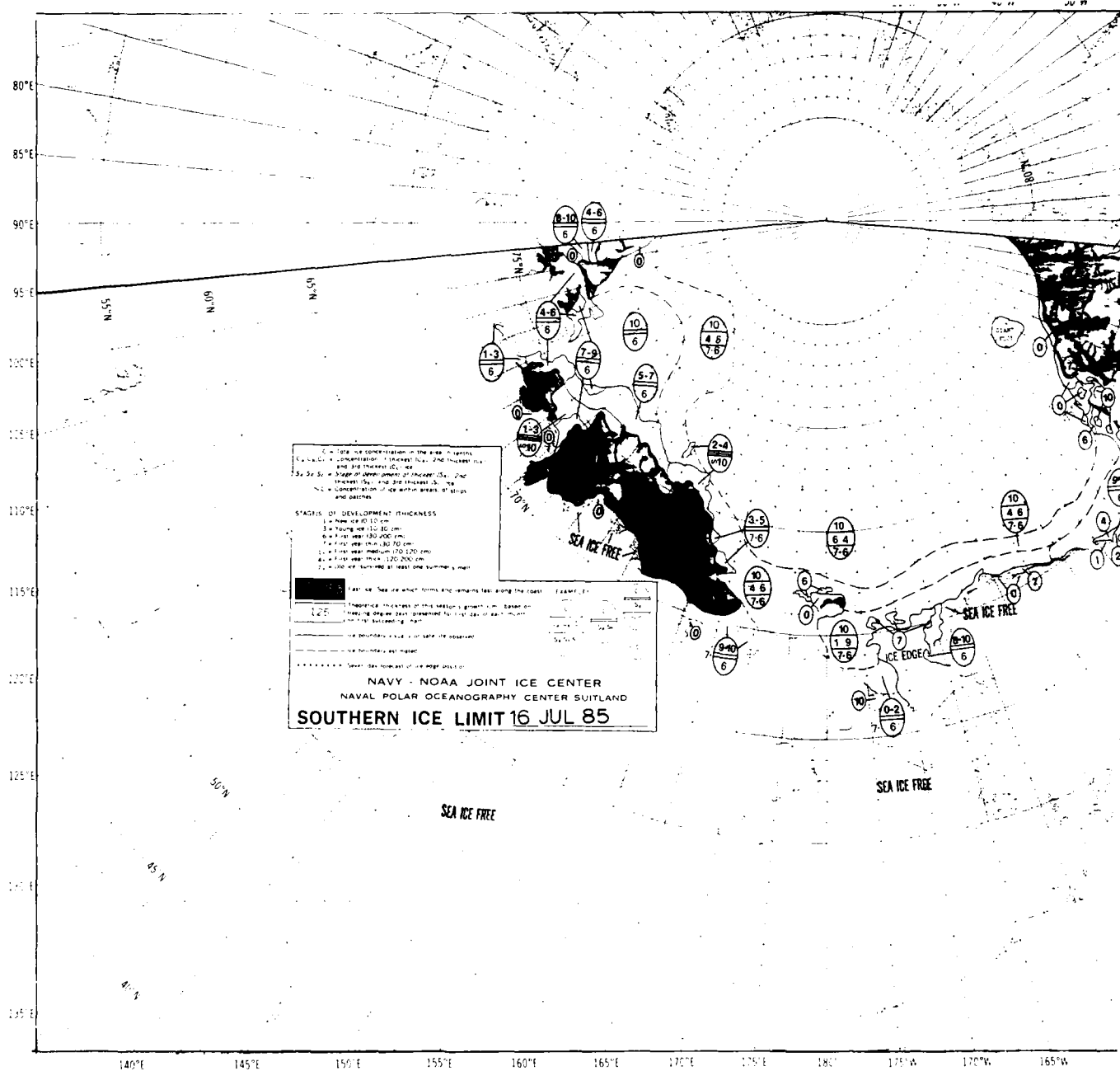


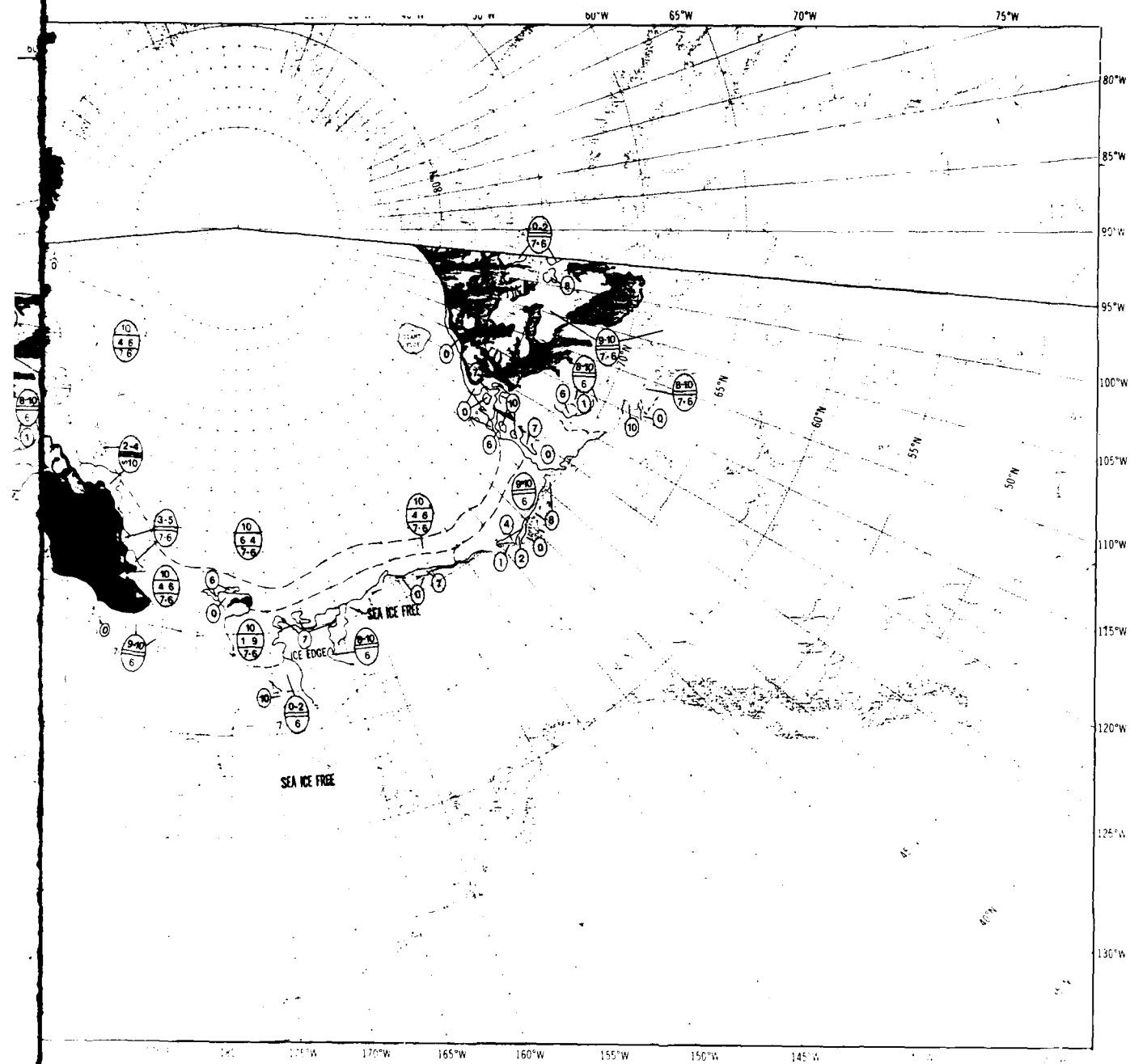


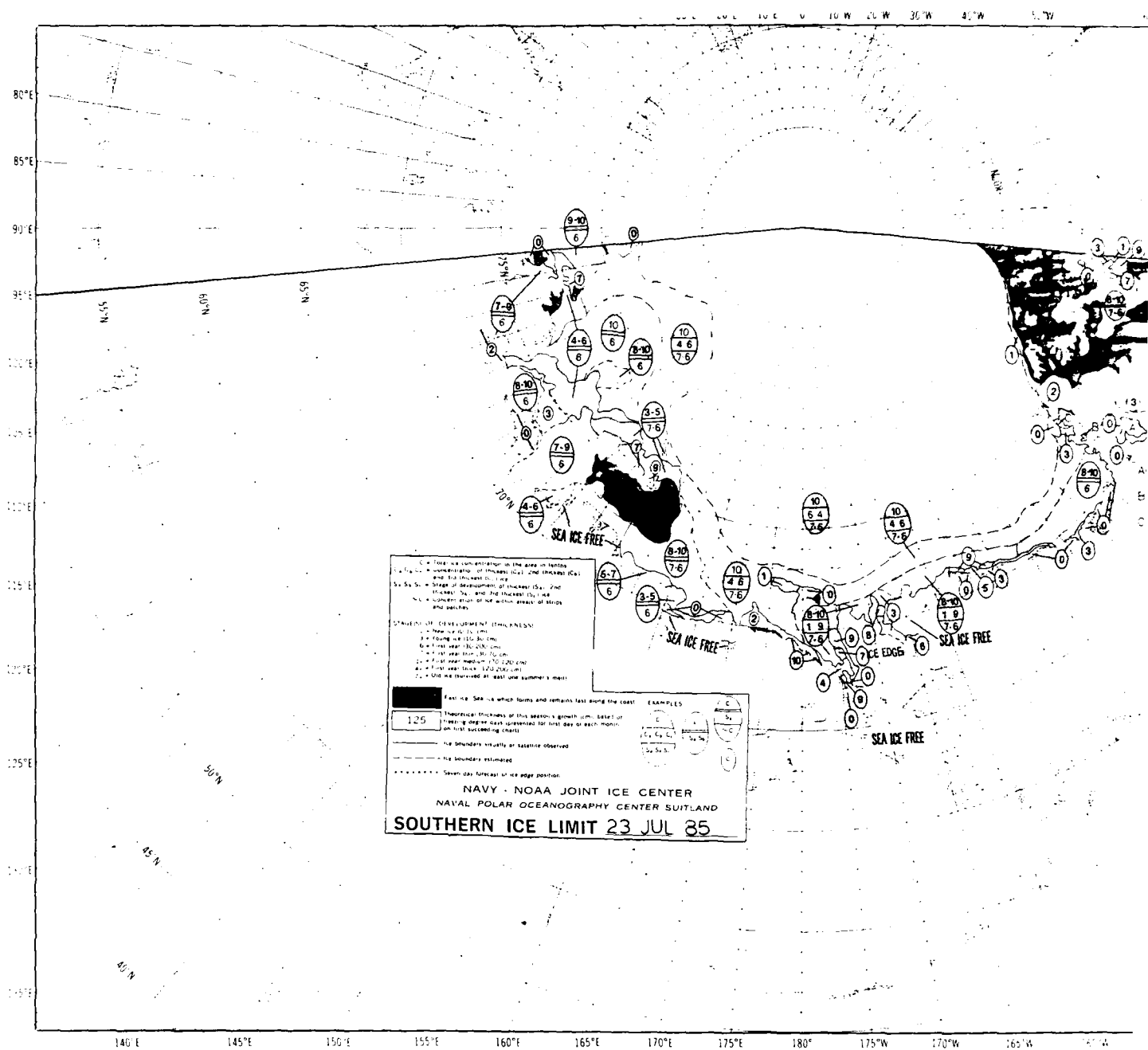




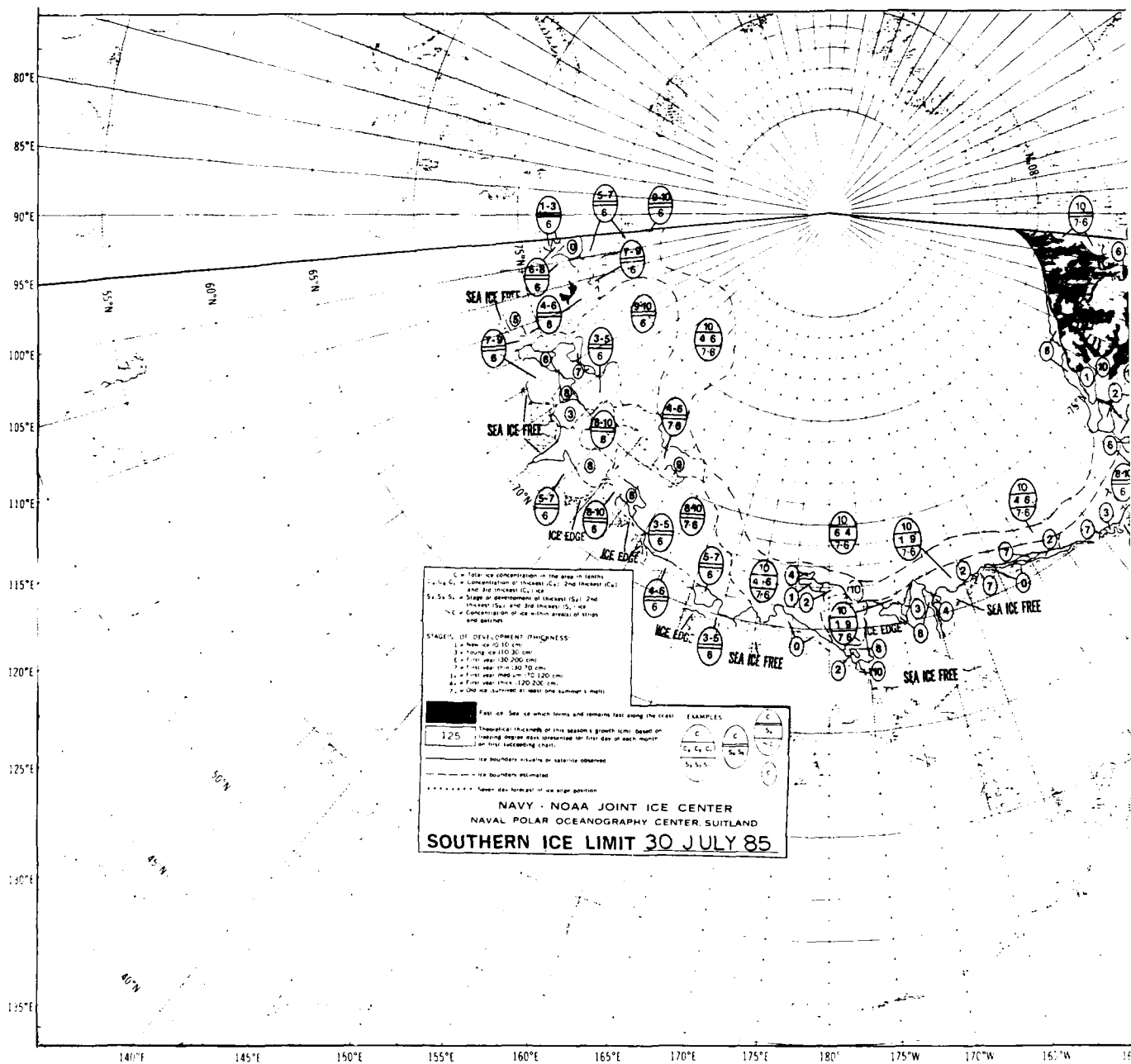
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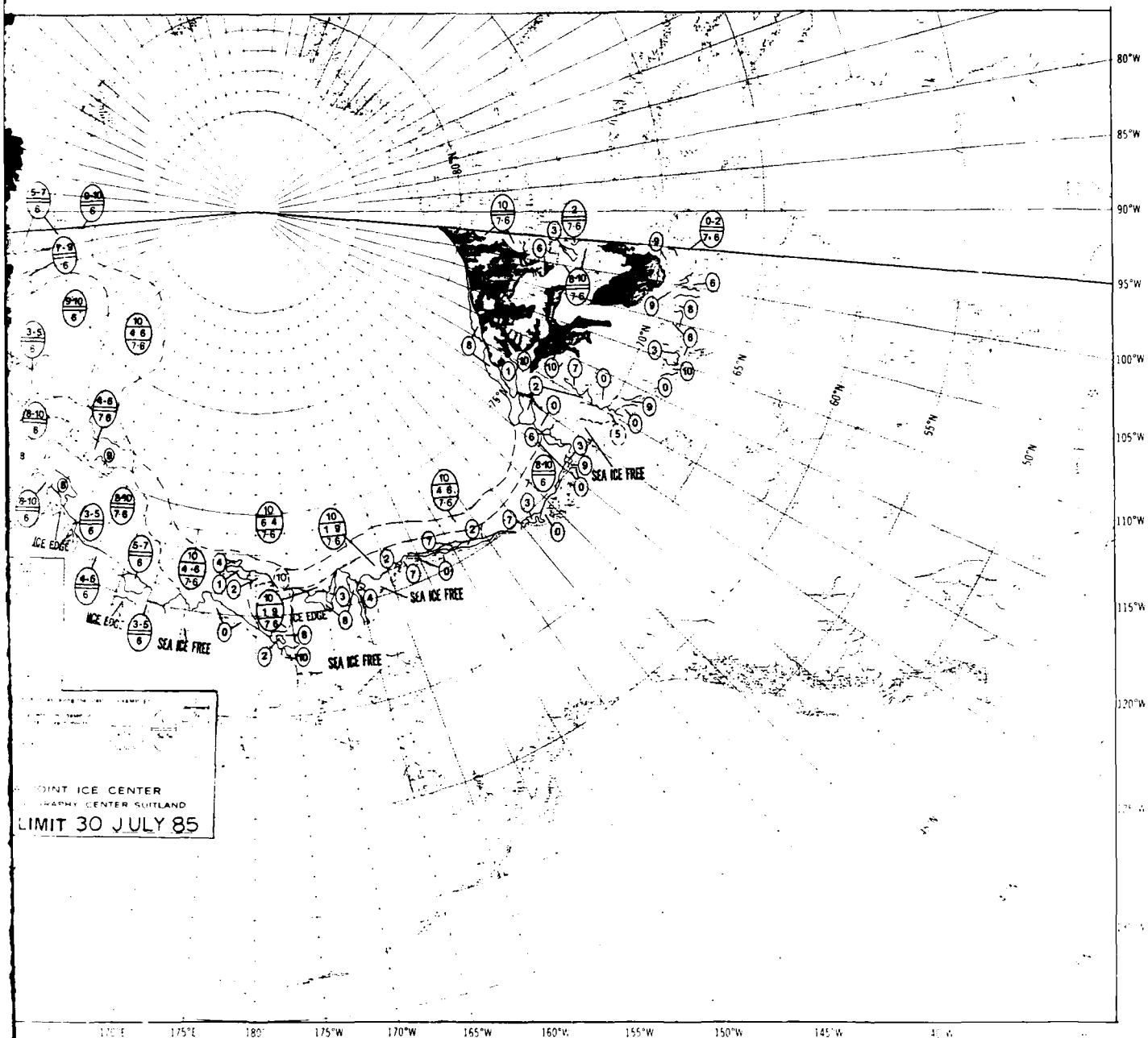


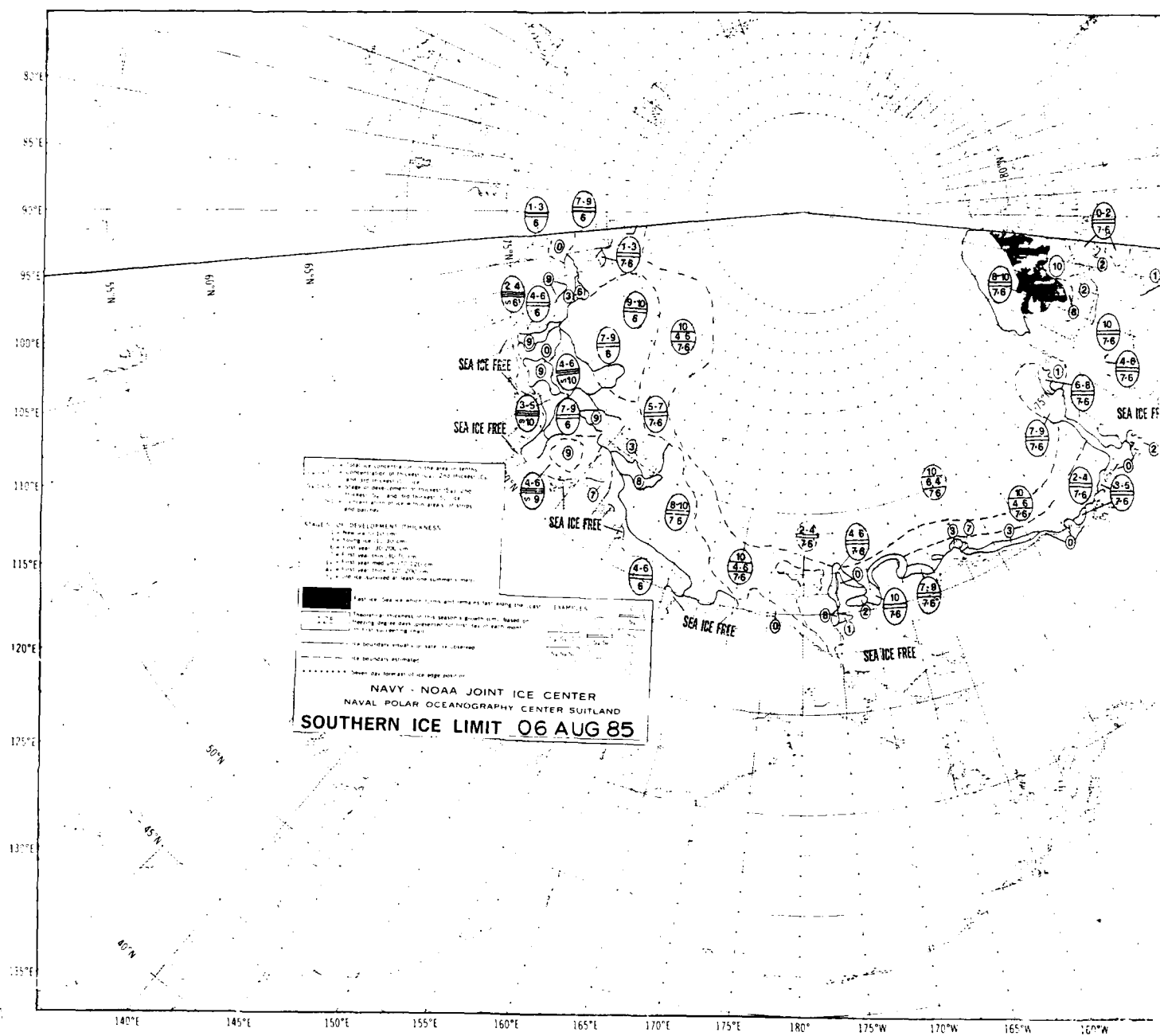


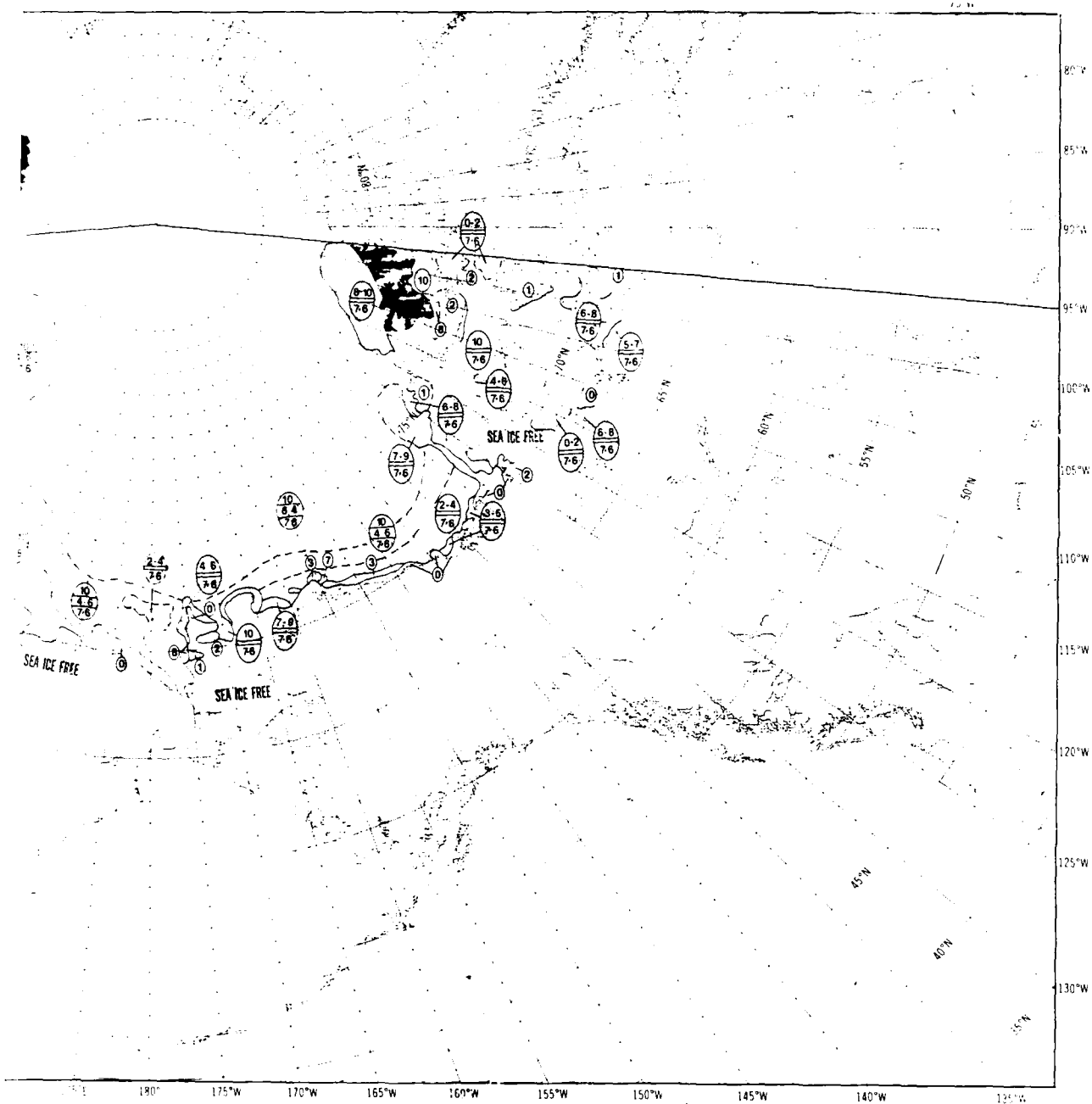


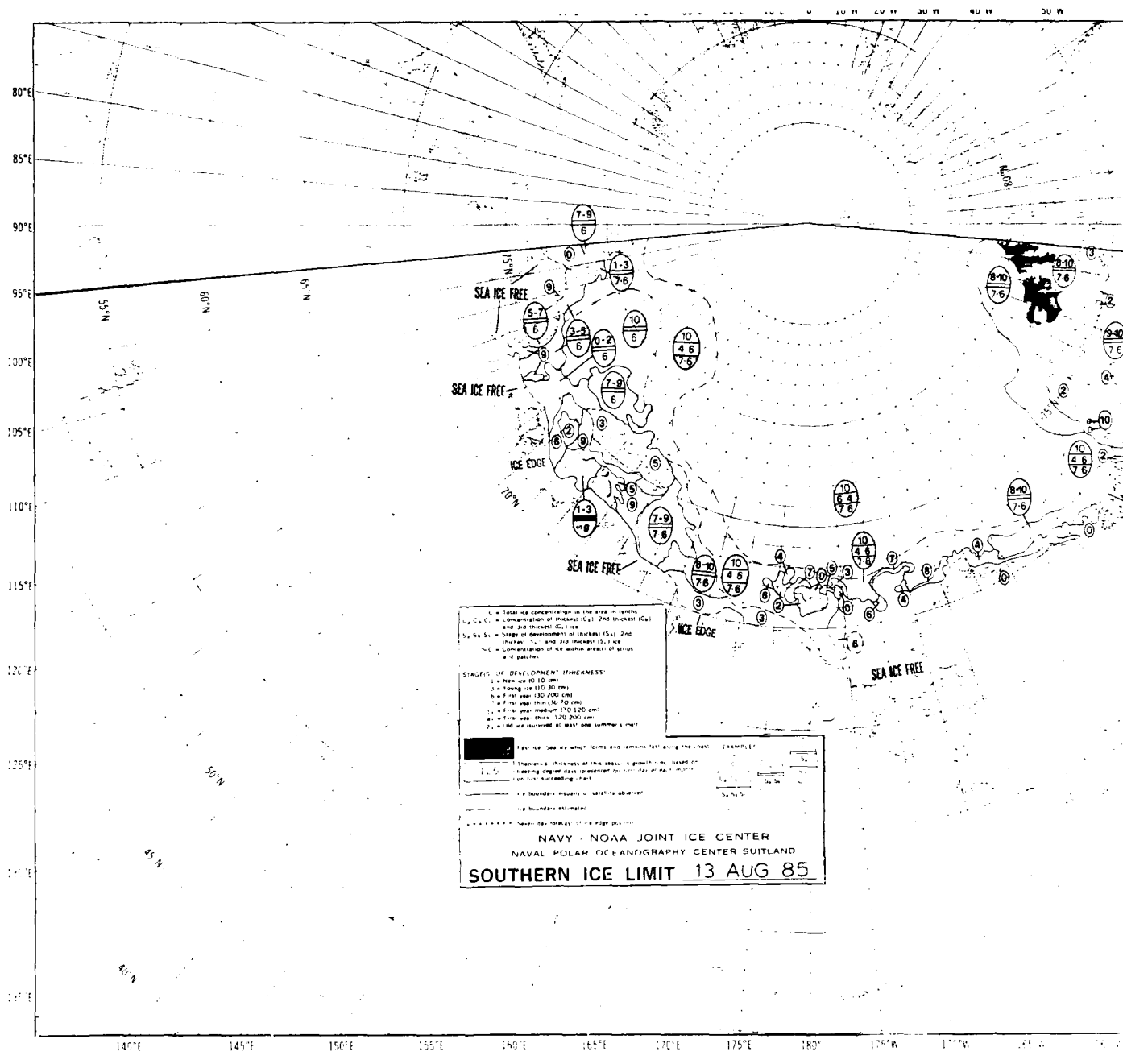


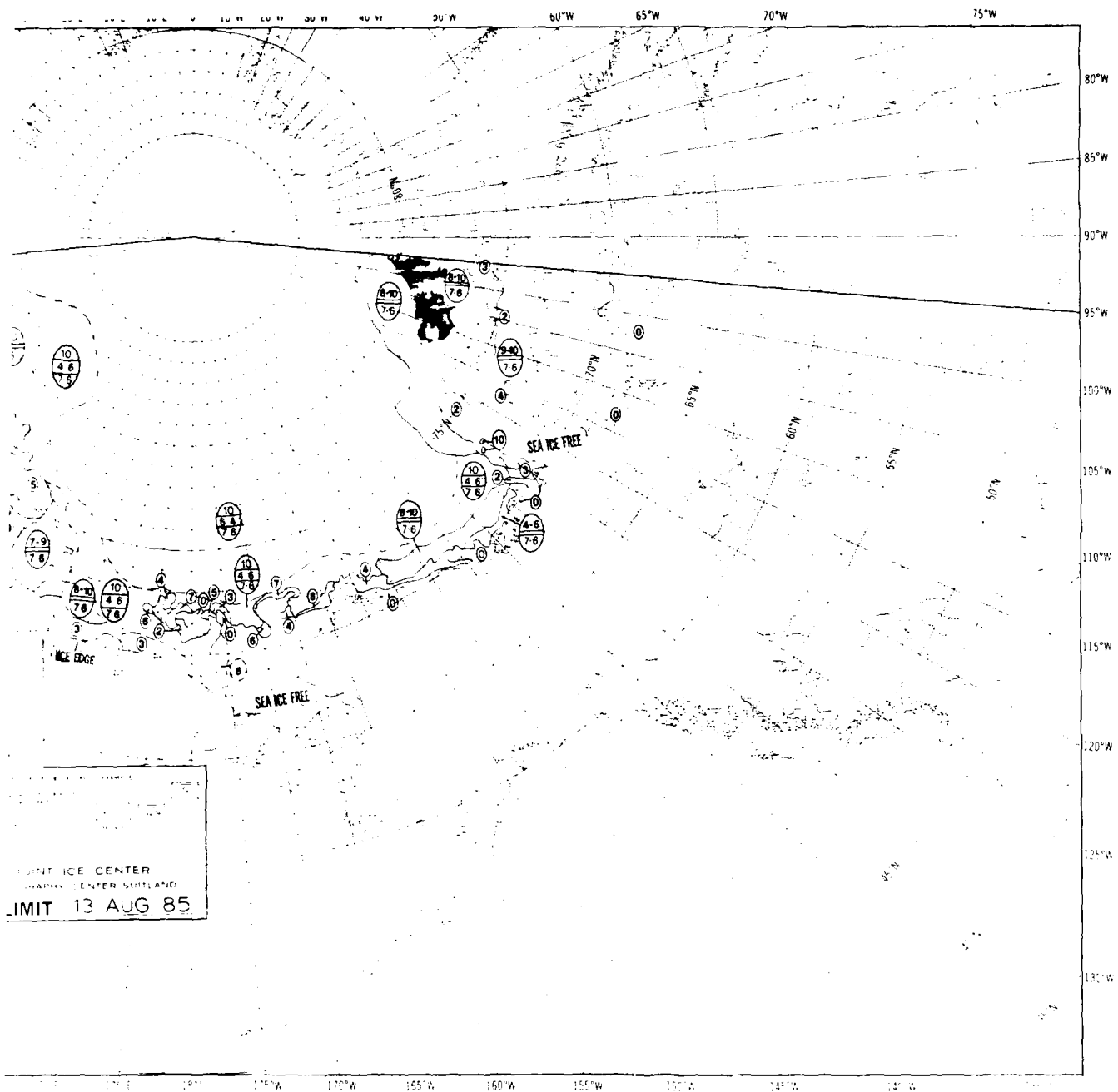




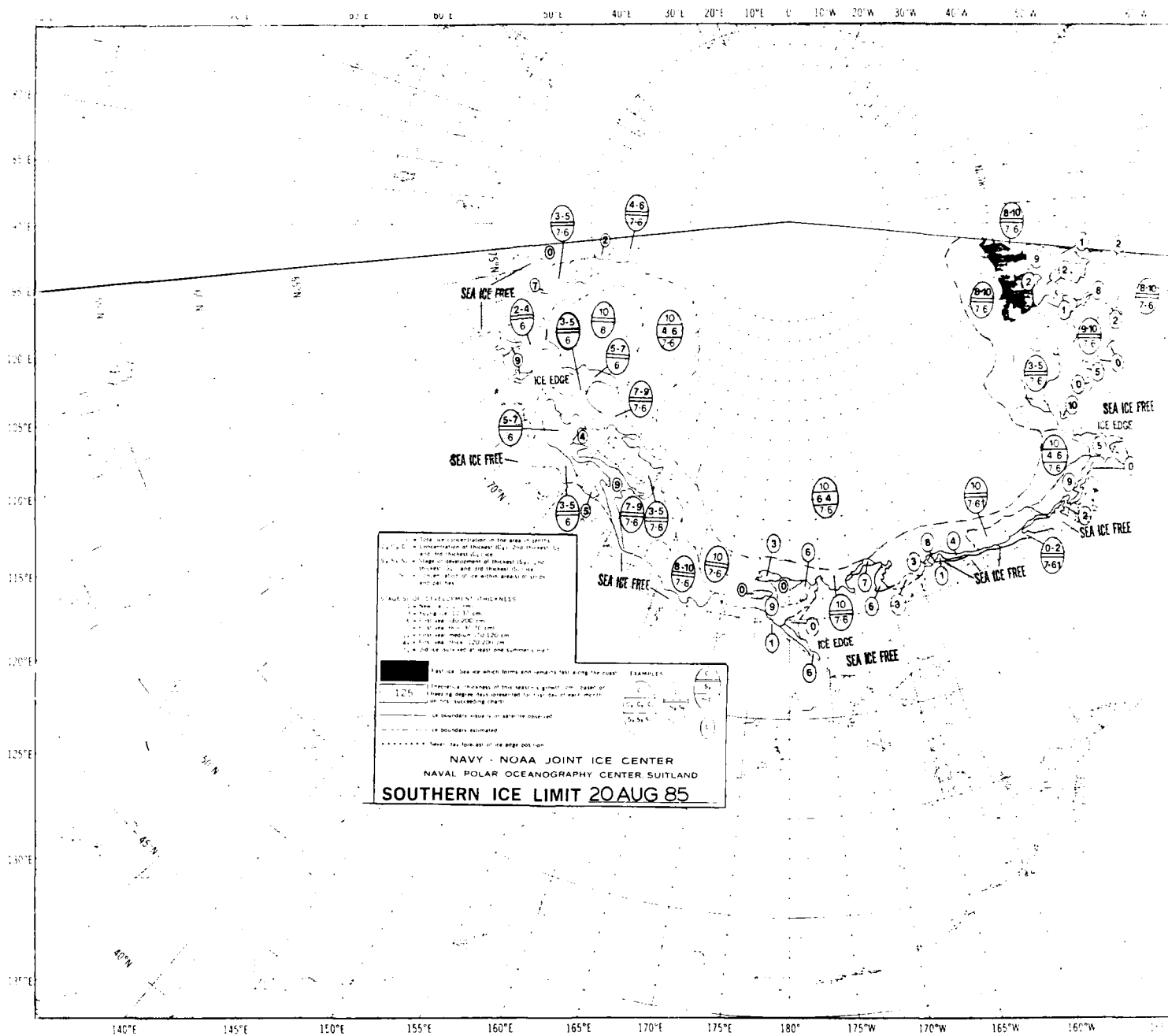


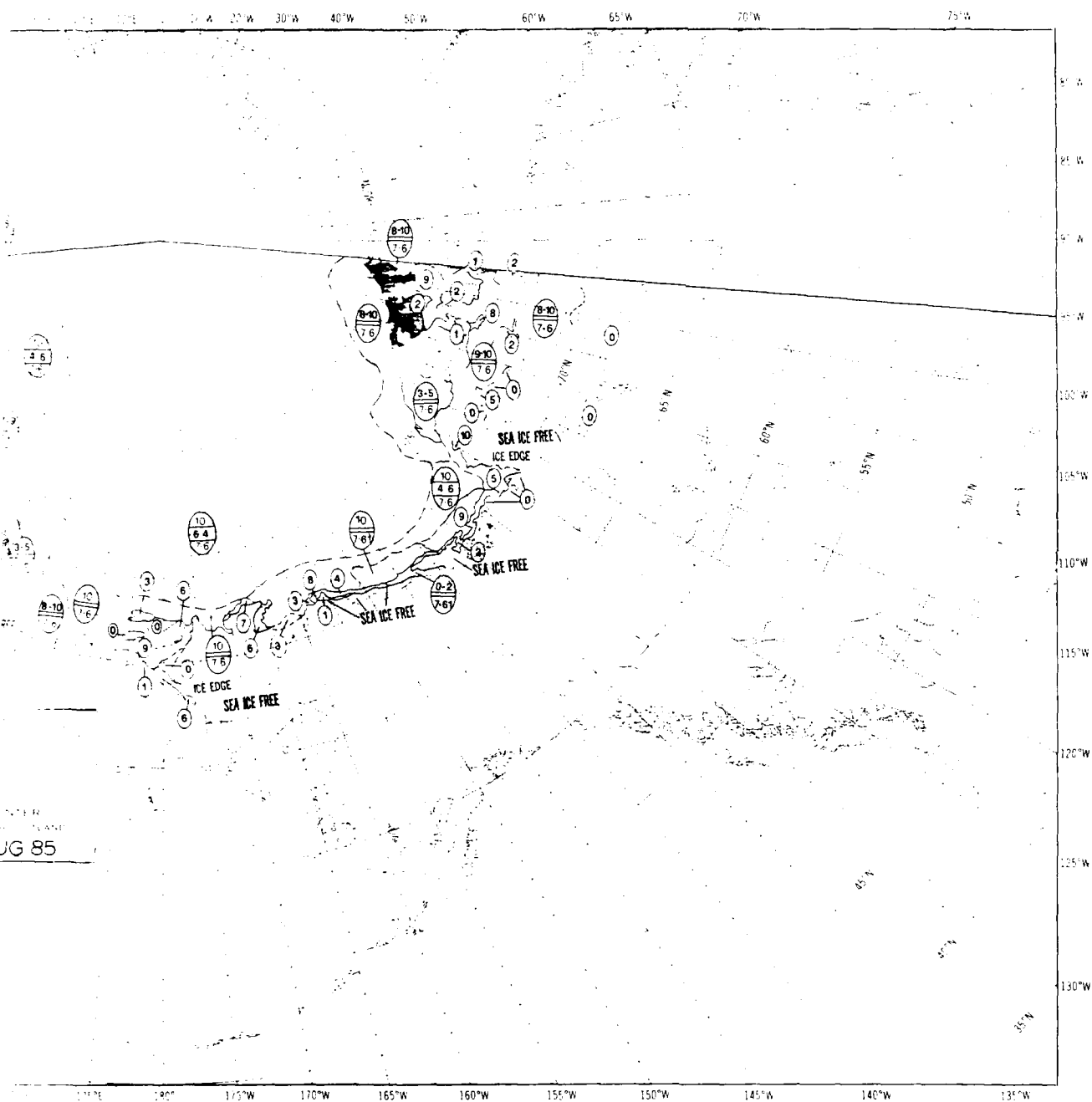




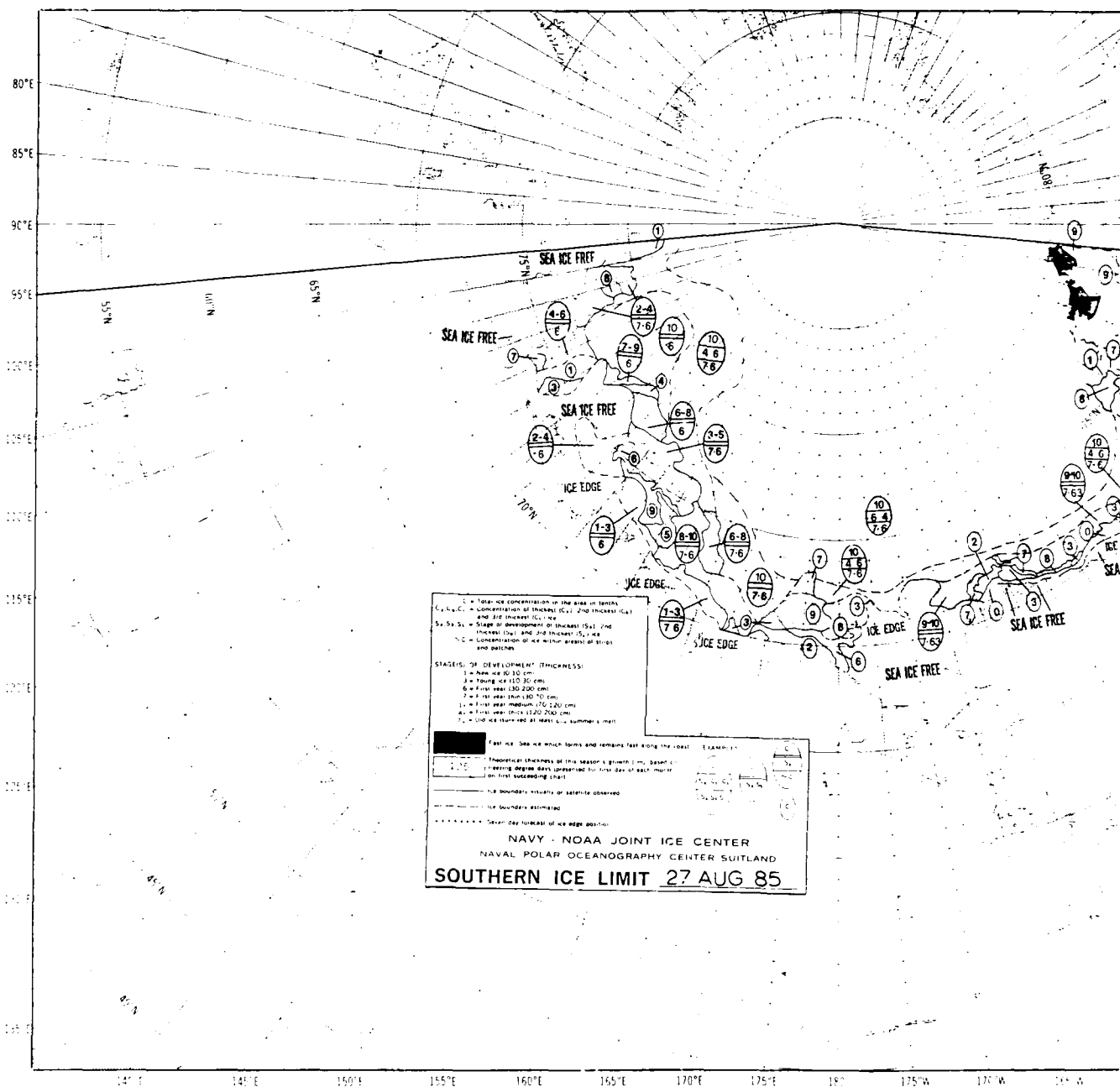


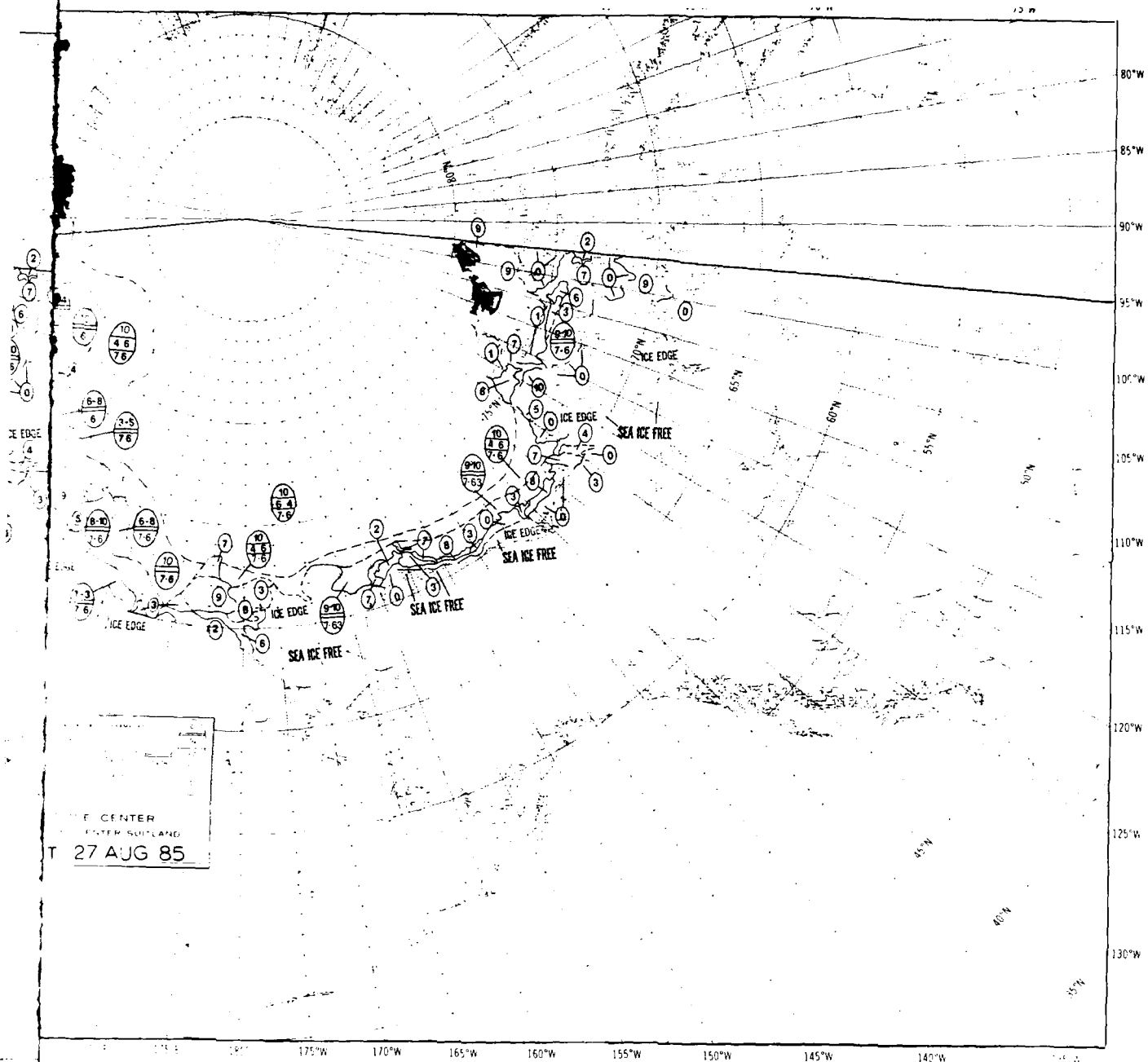
UNIT ICE CENTER
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LIMIT 13 AUG 85

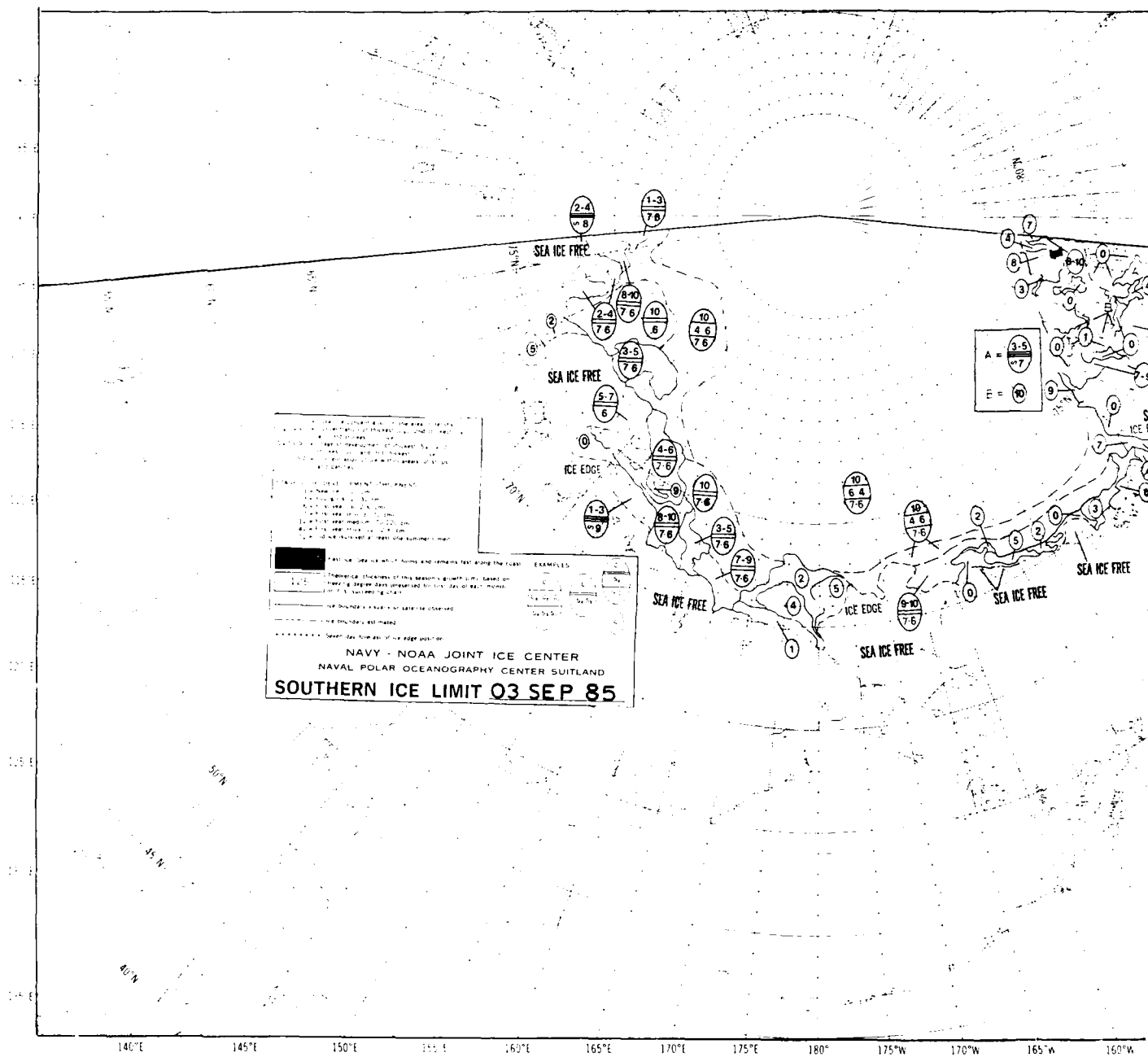


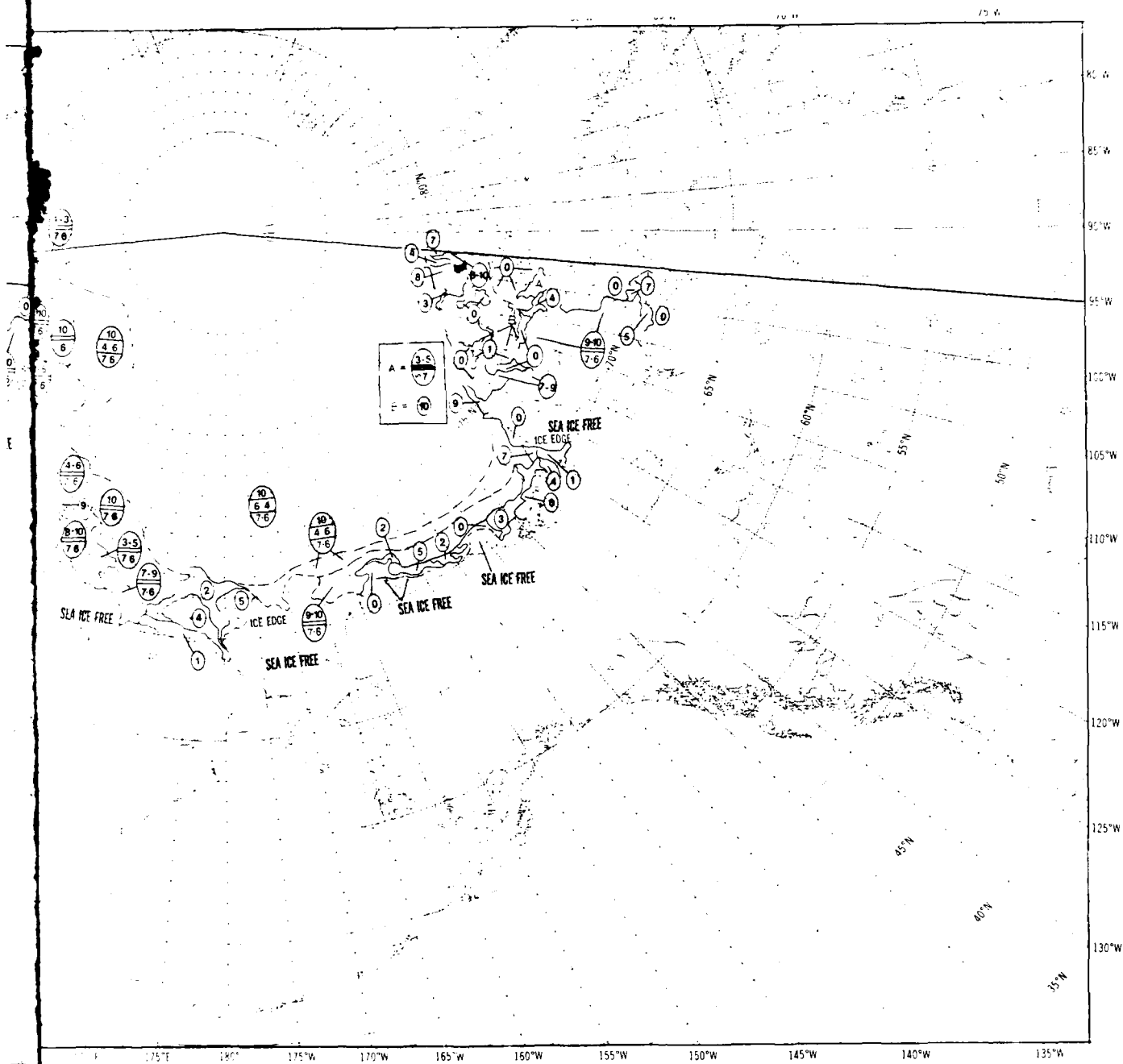


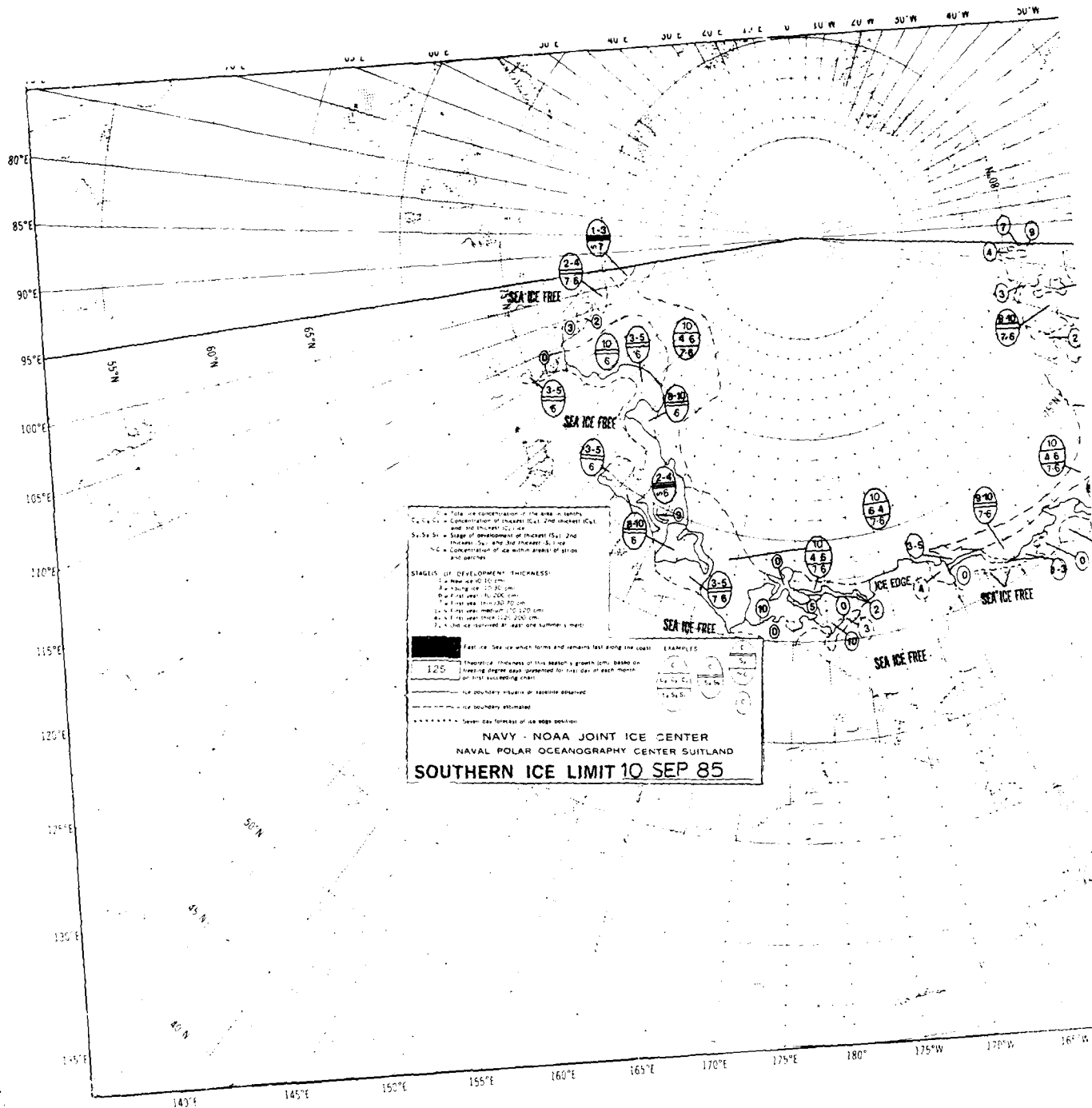
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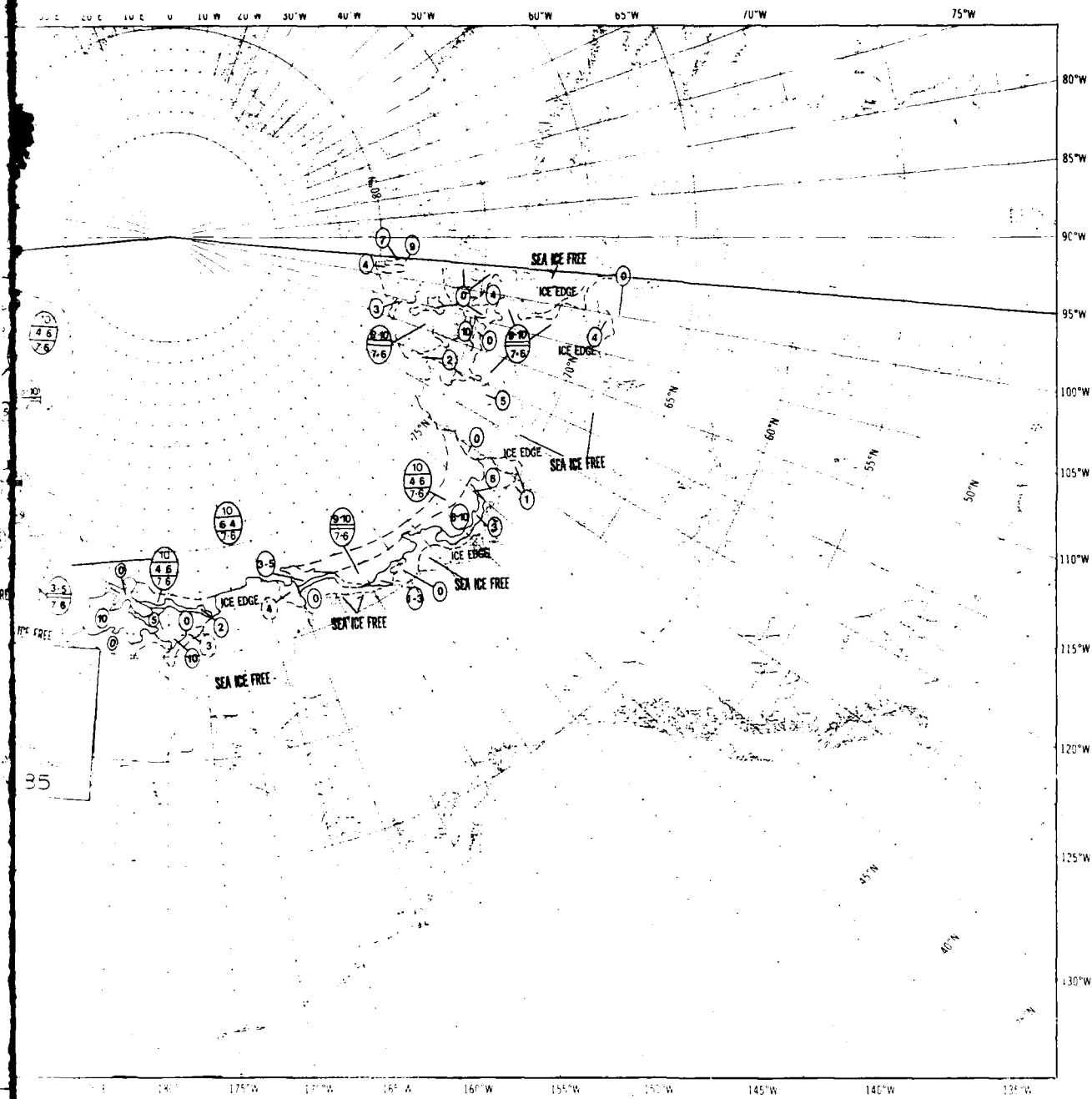


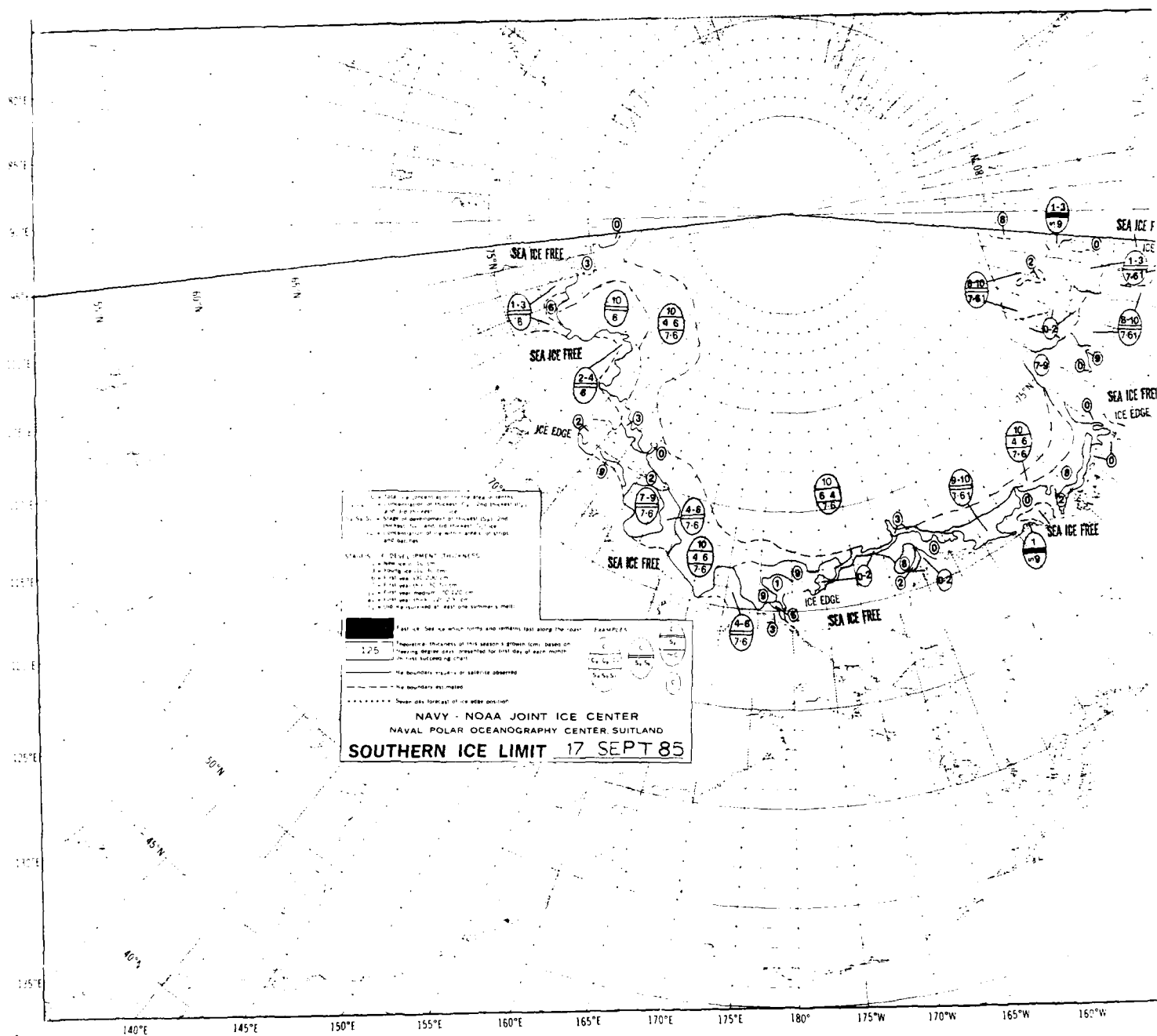


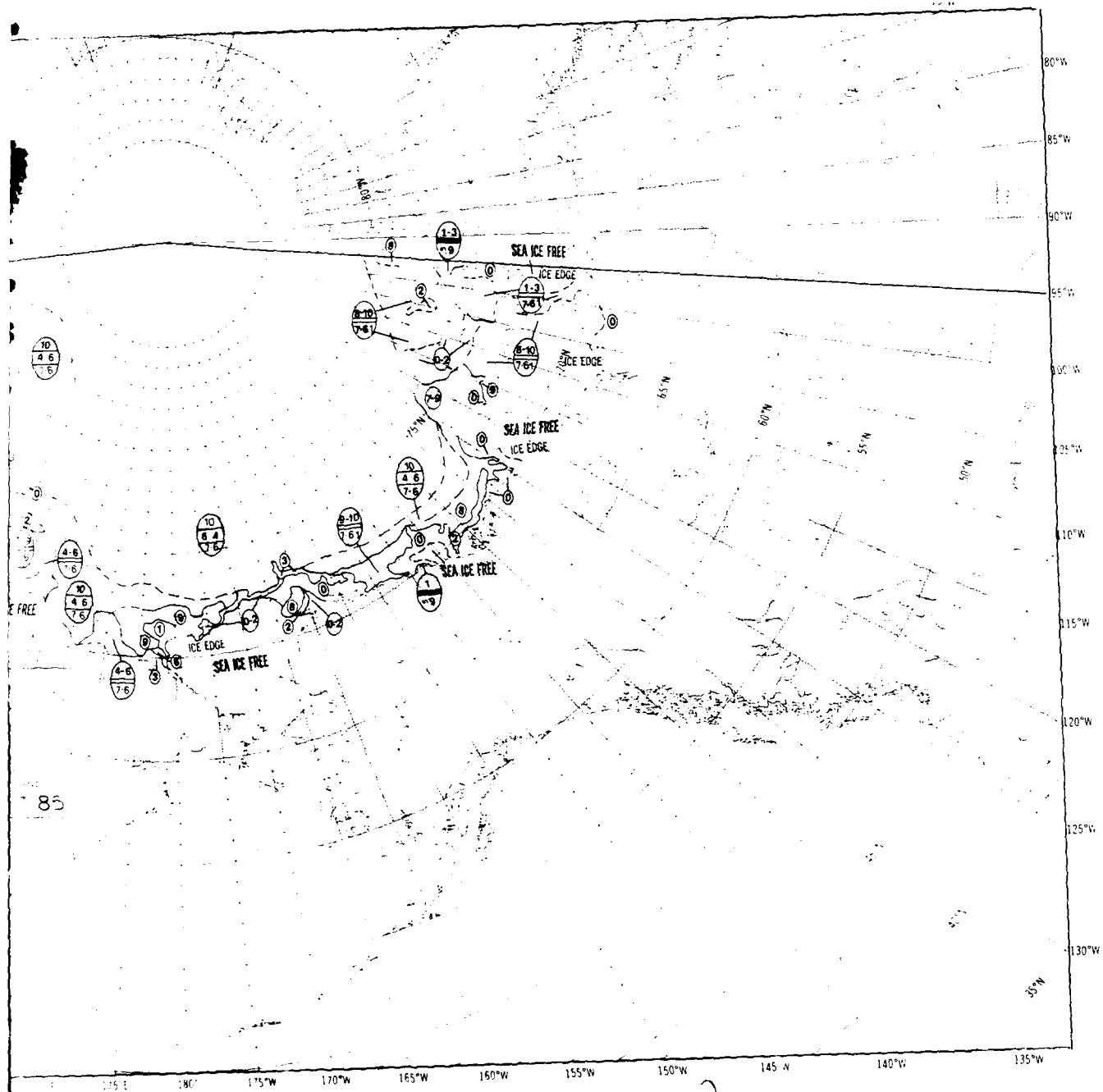


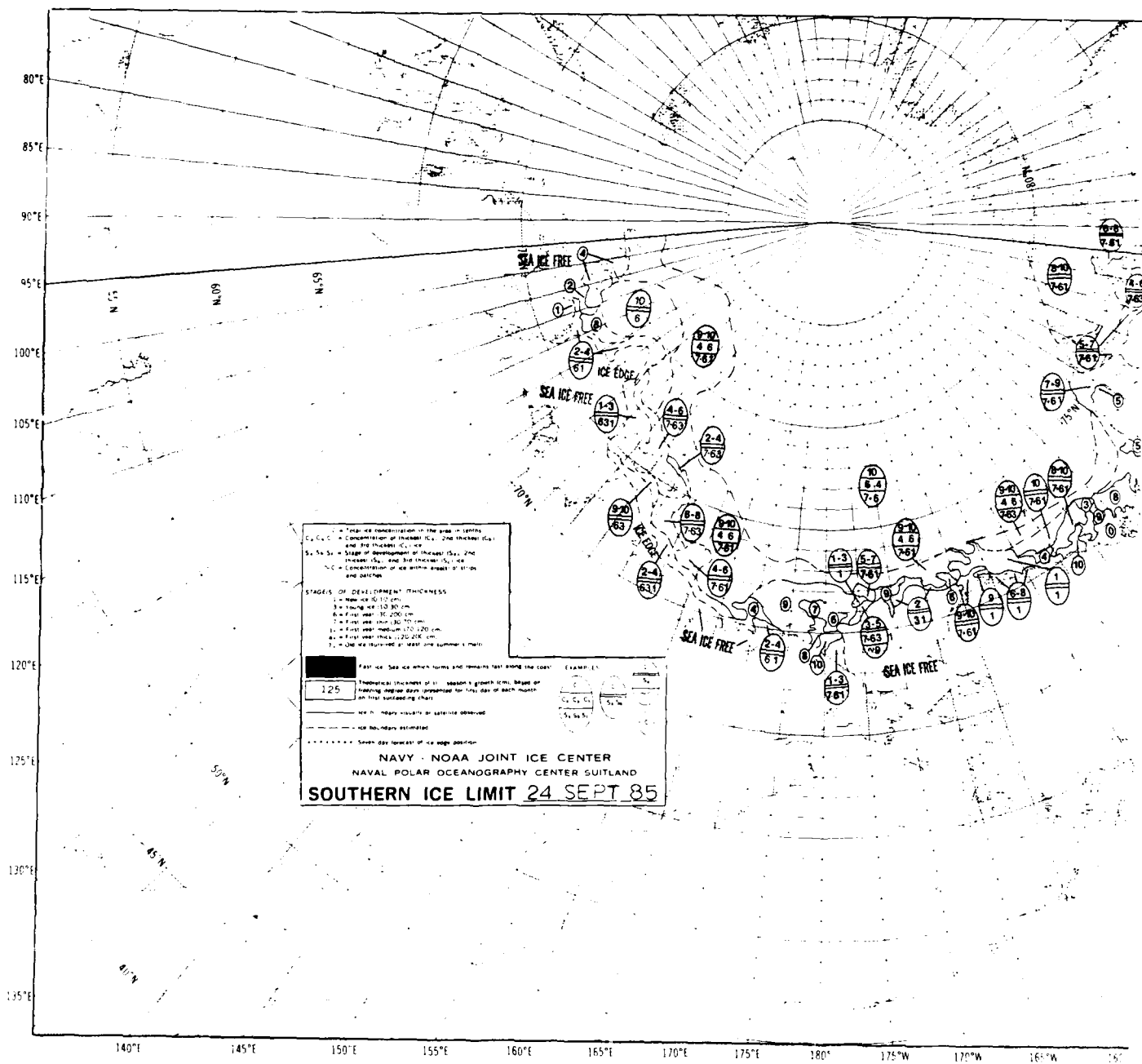


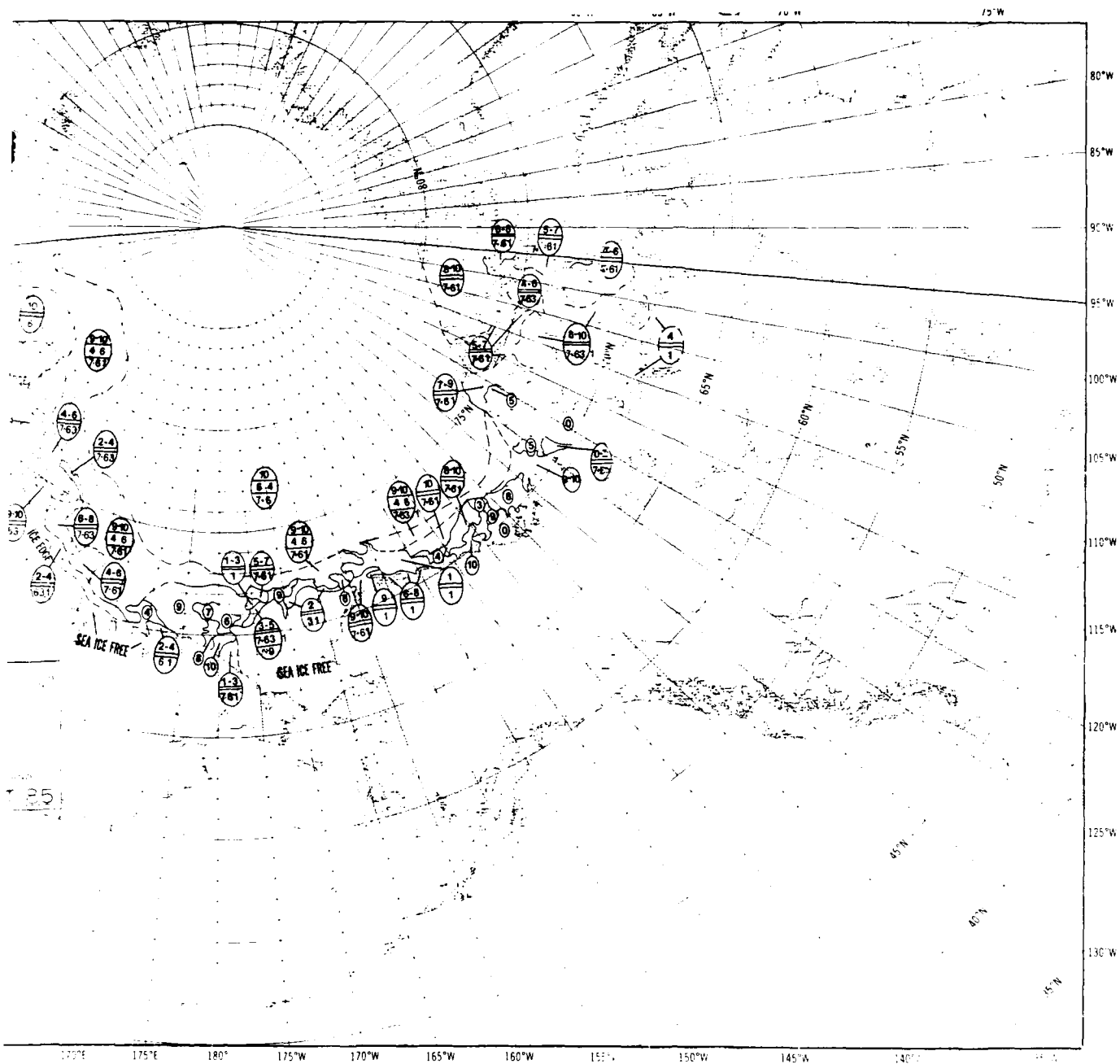


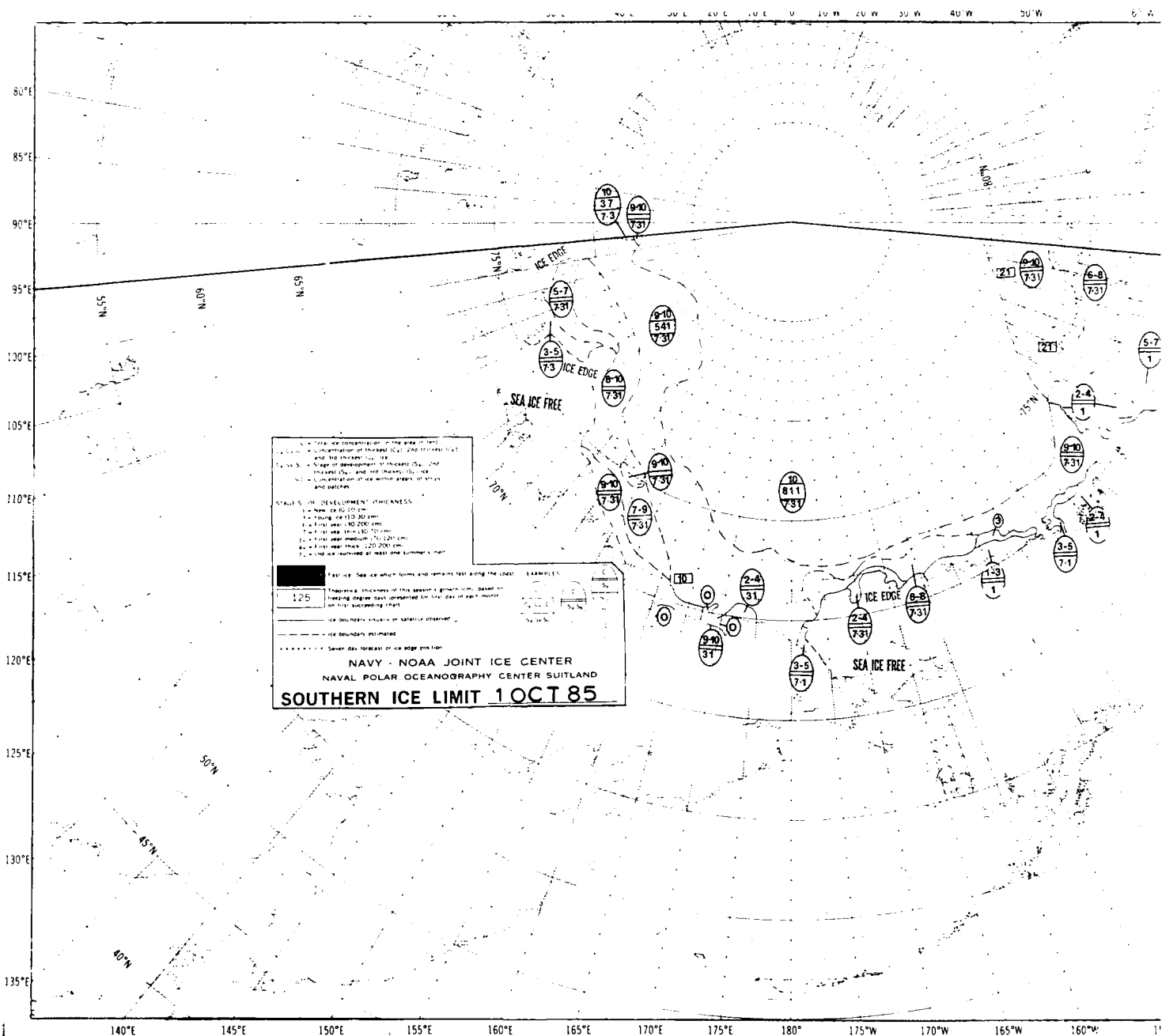


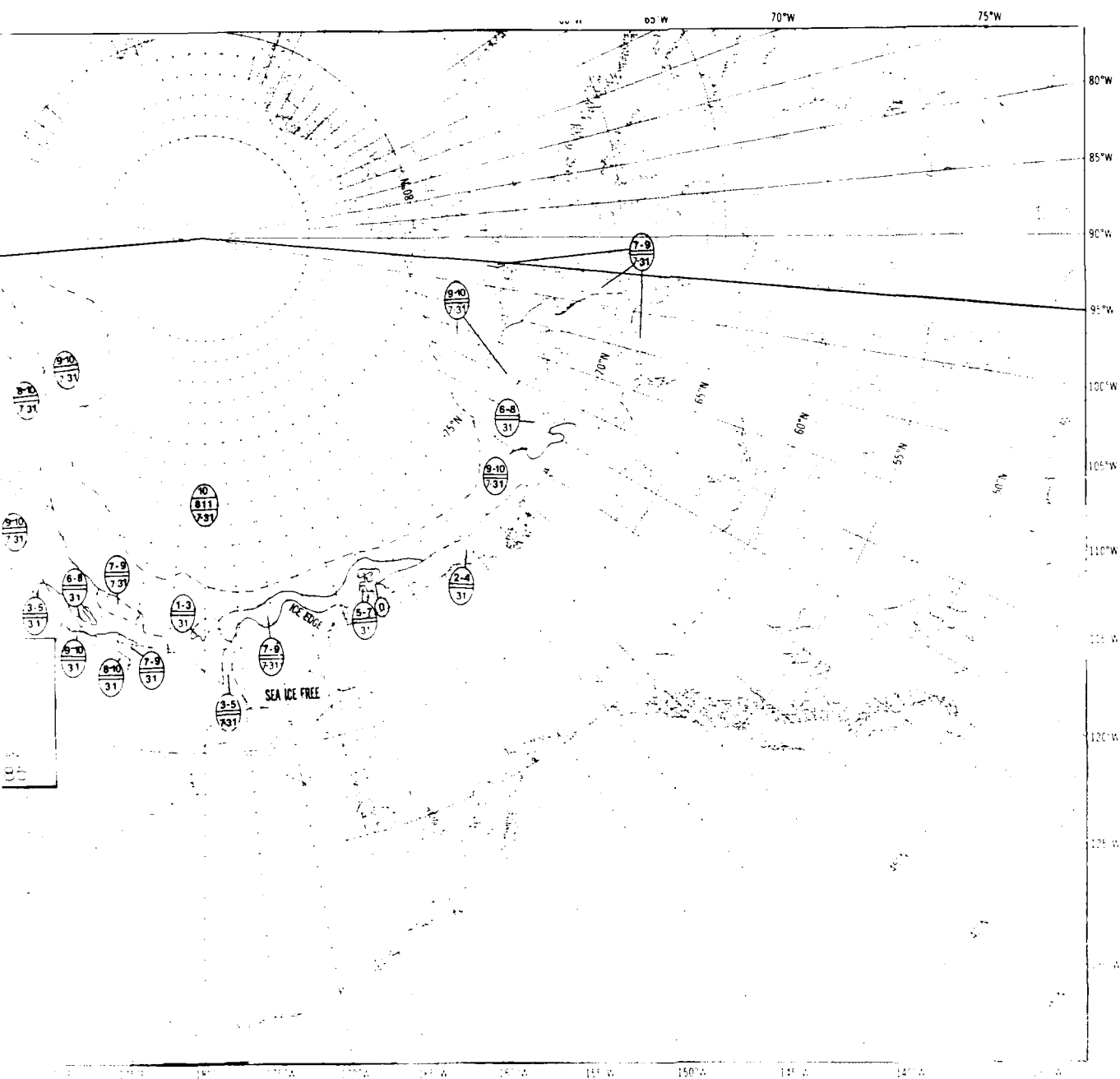












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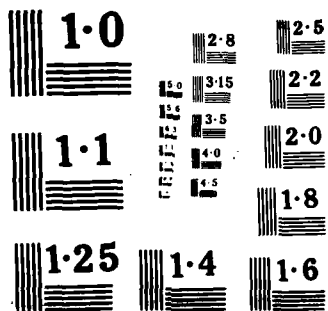
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POLAR OCEANOGRAPHY CENTER WASHINGTON DC 1985

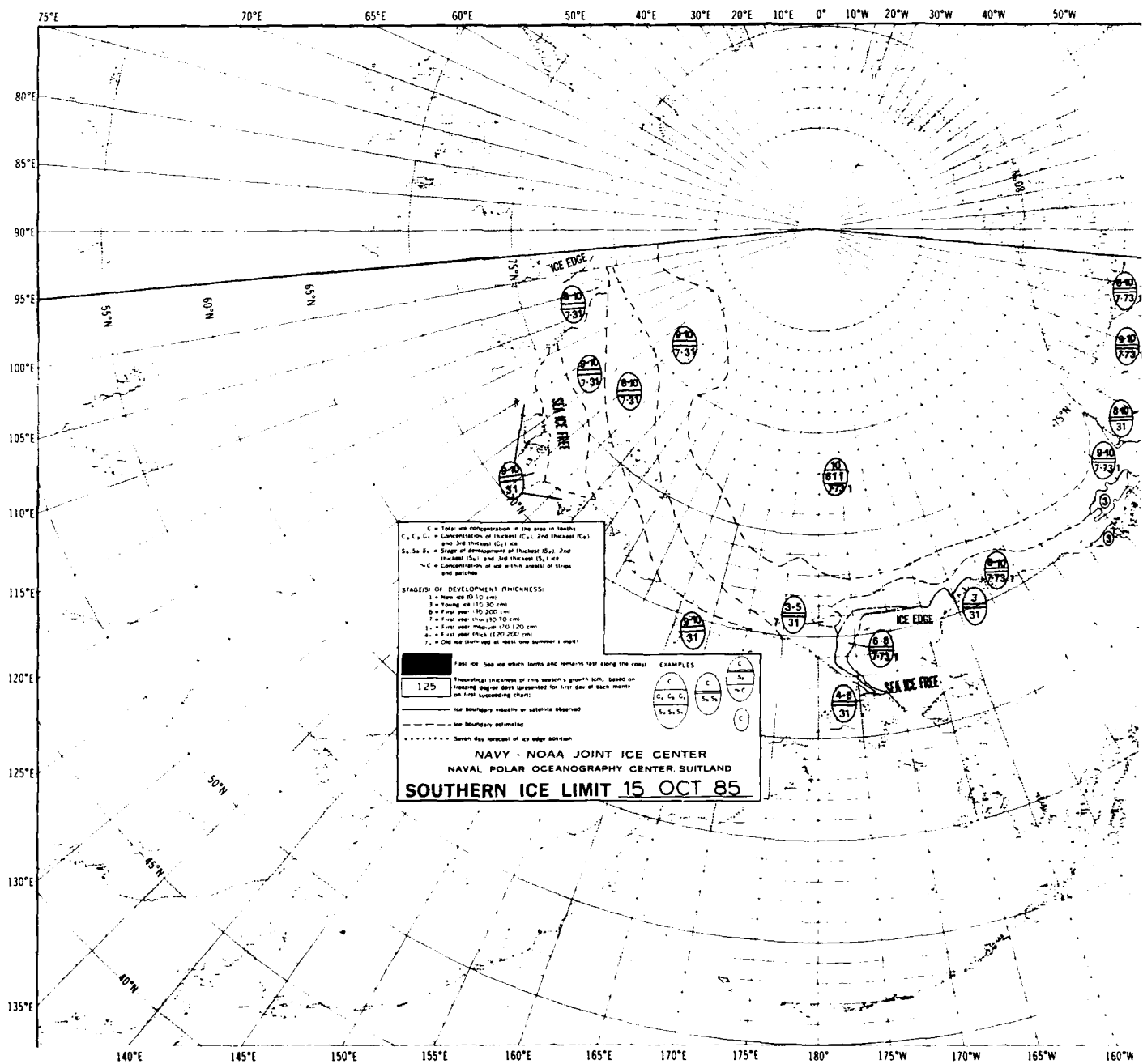
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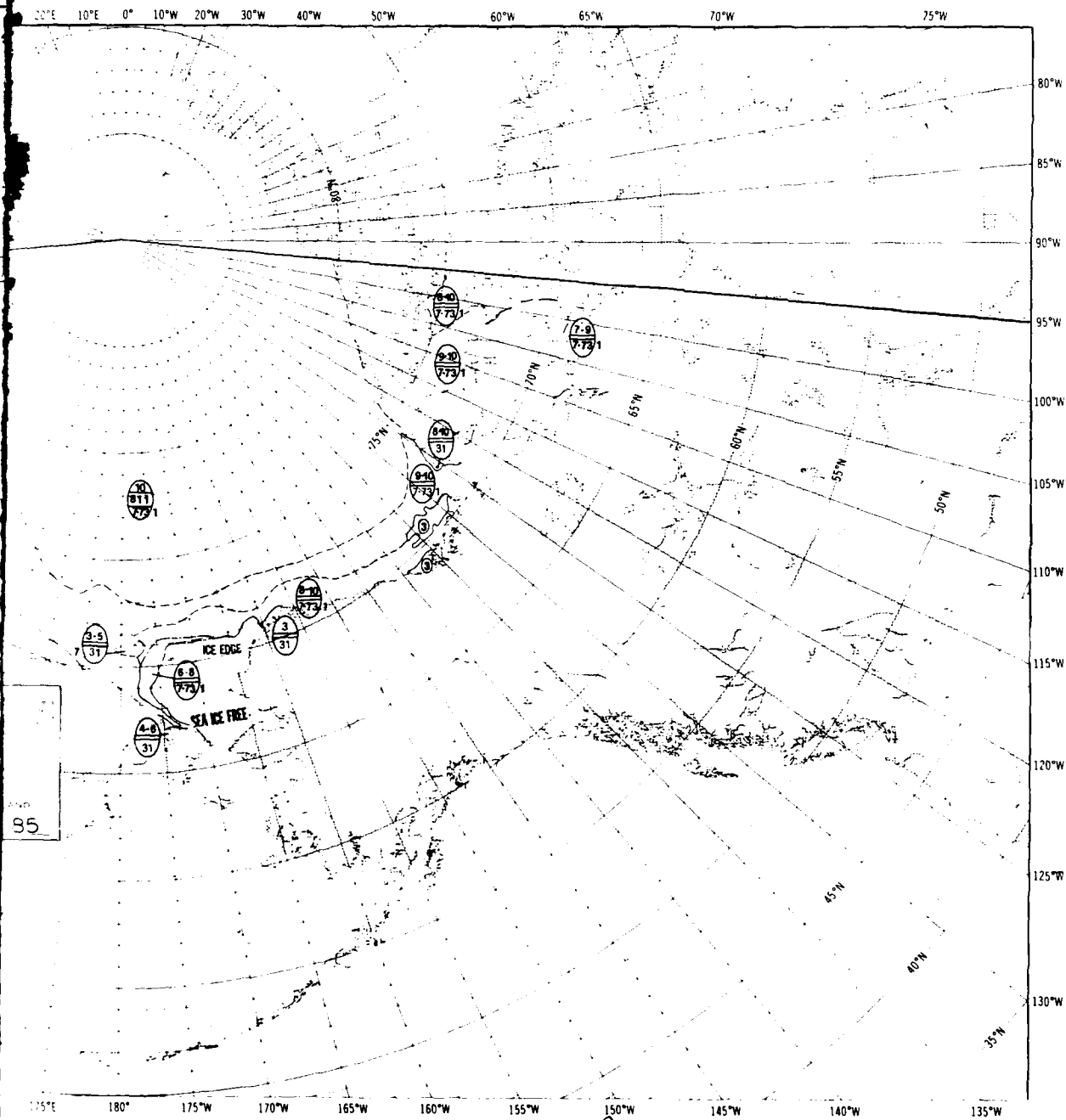
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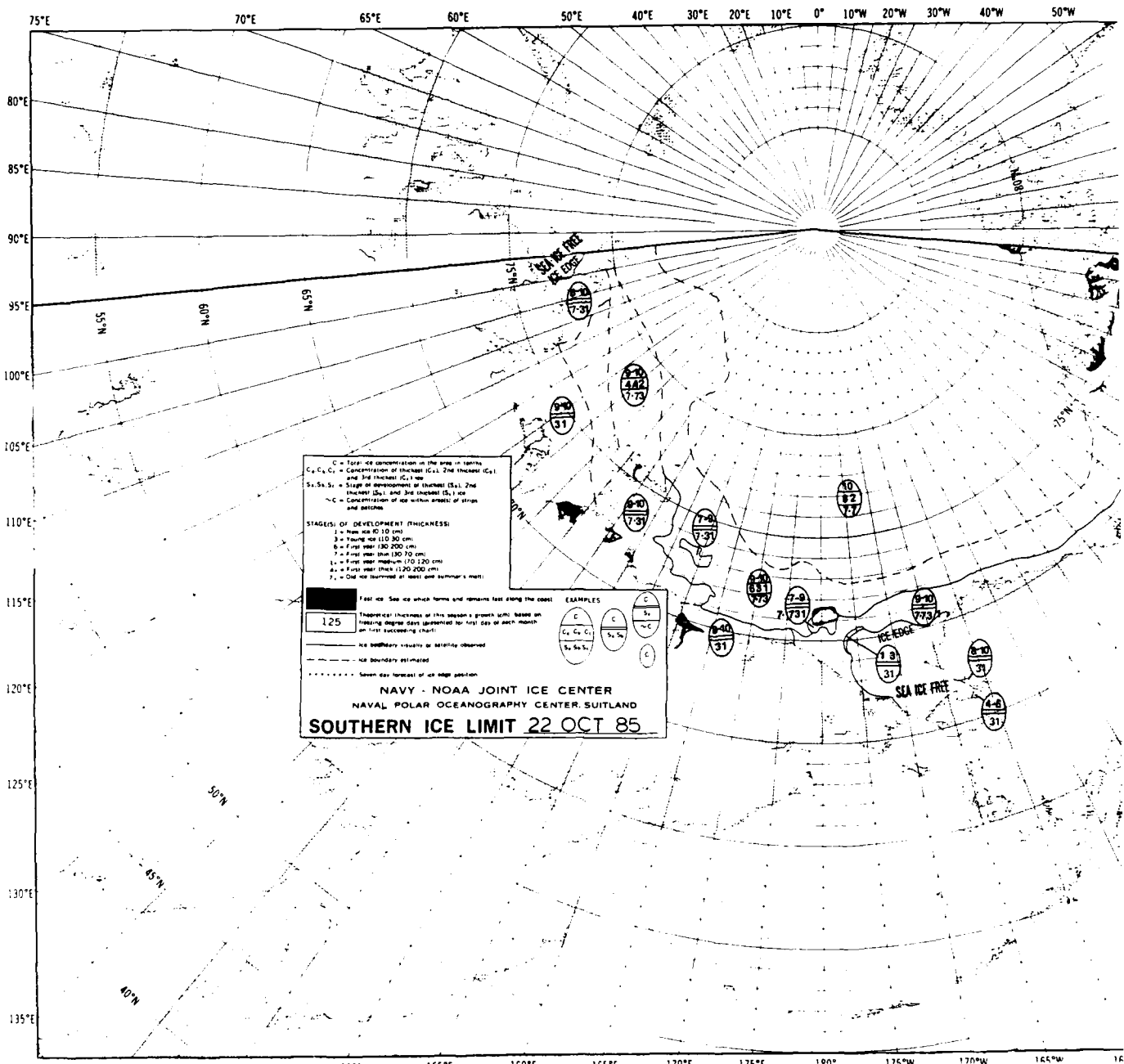
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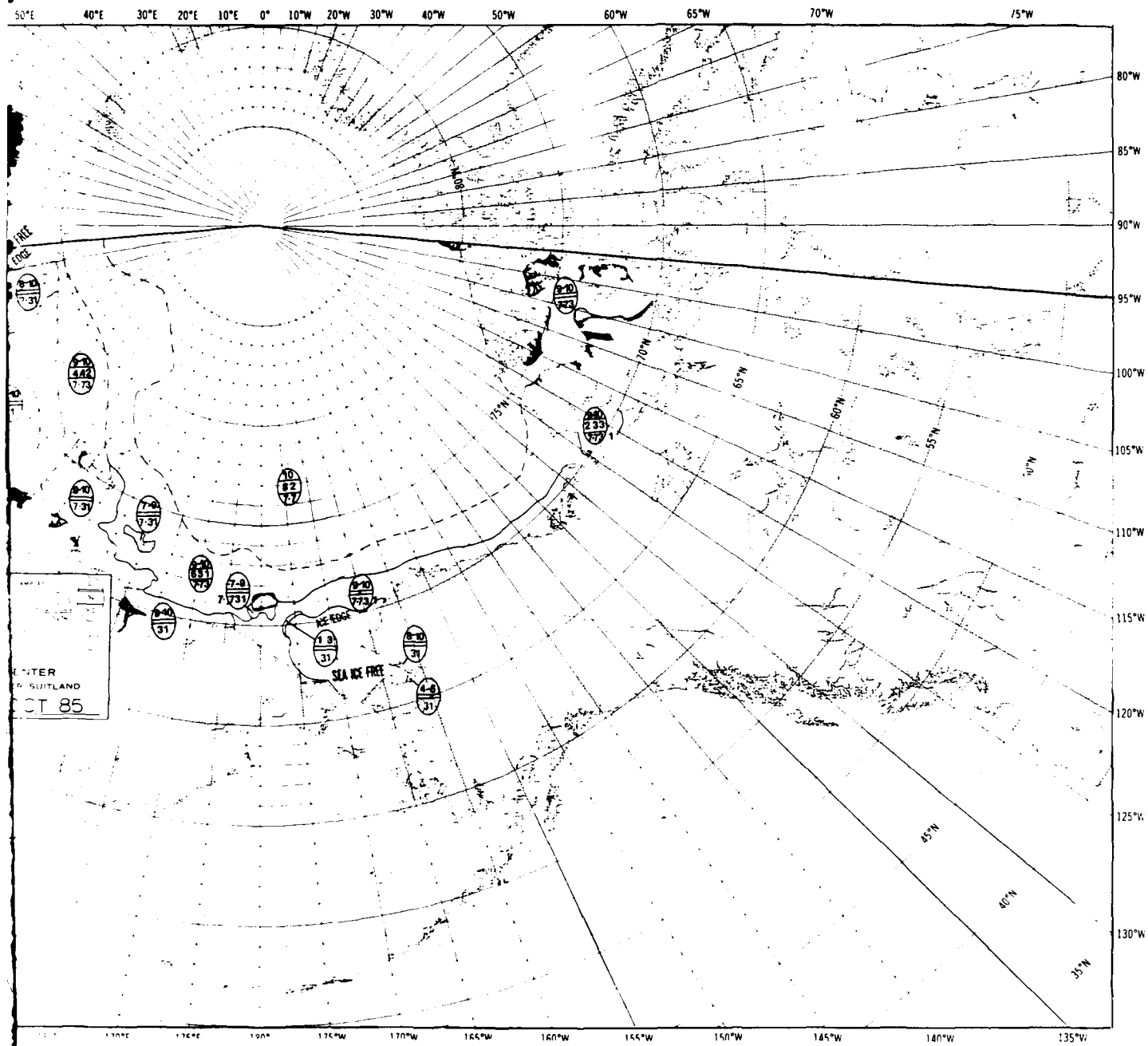
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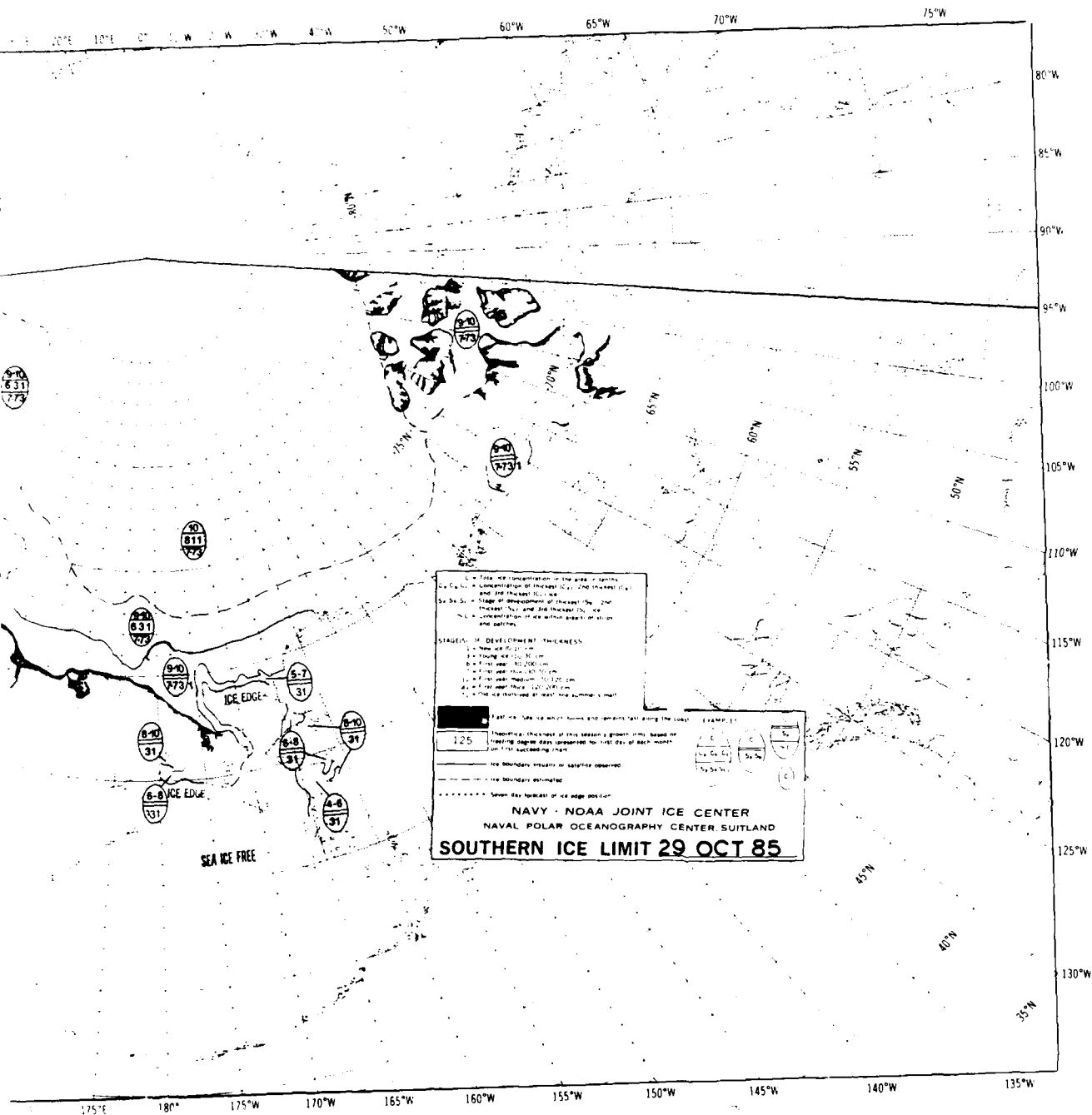


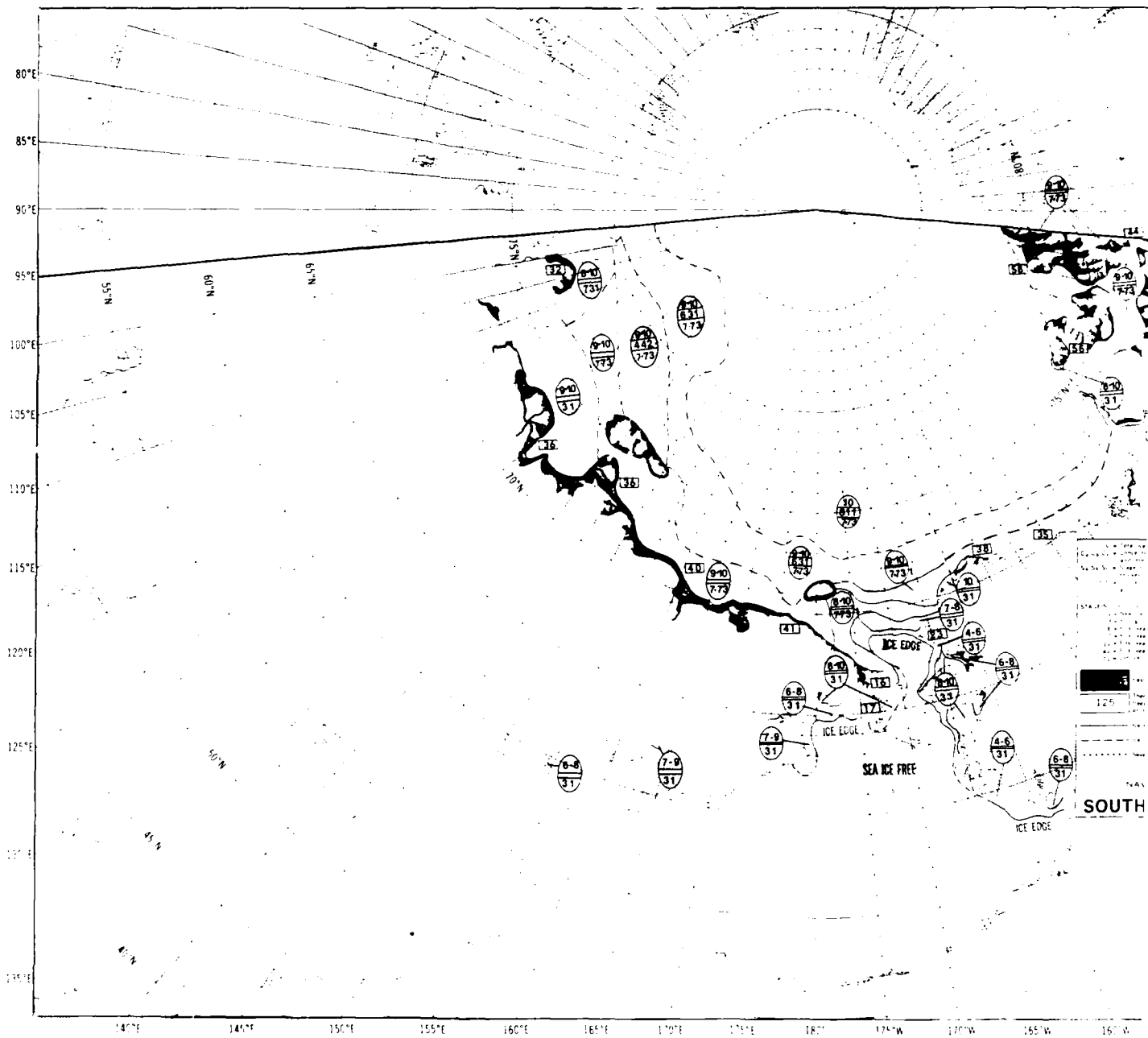


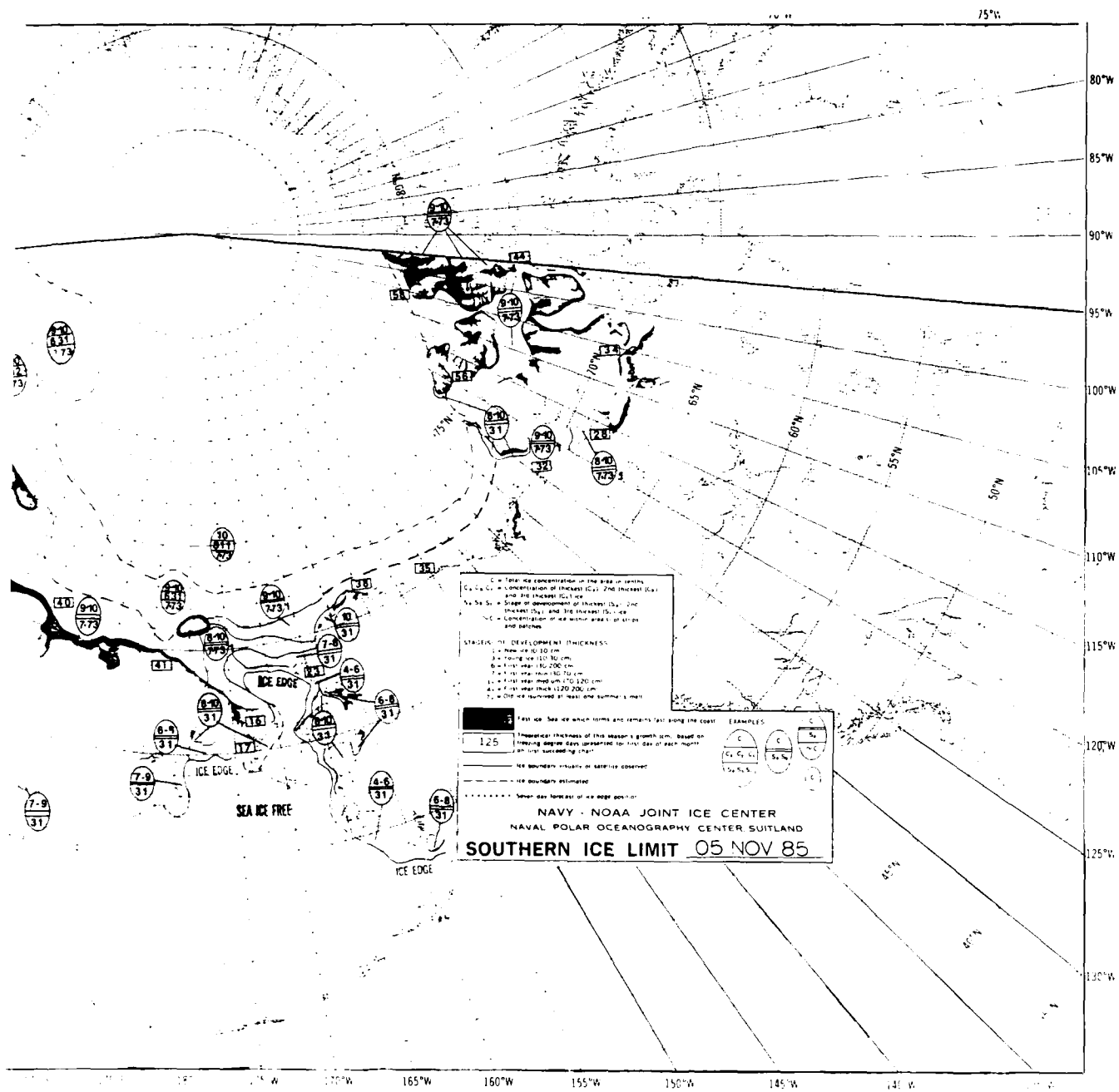


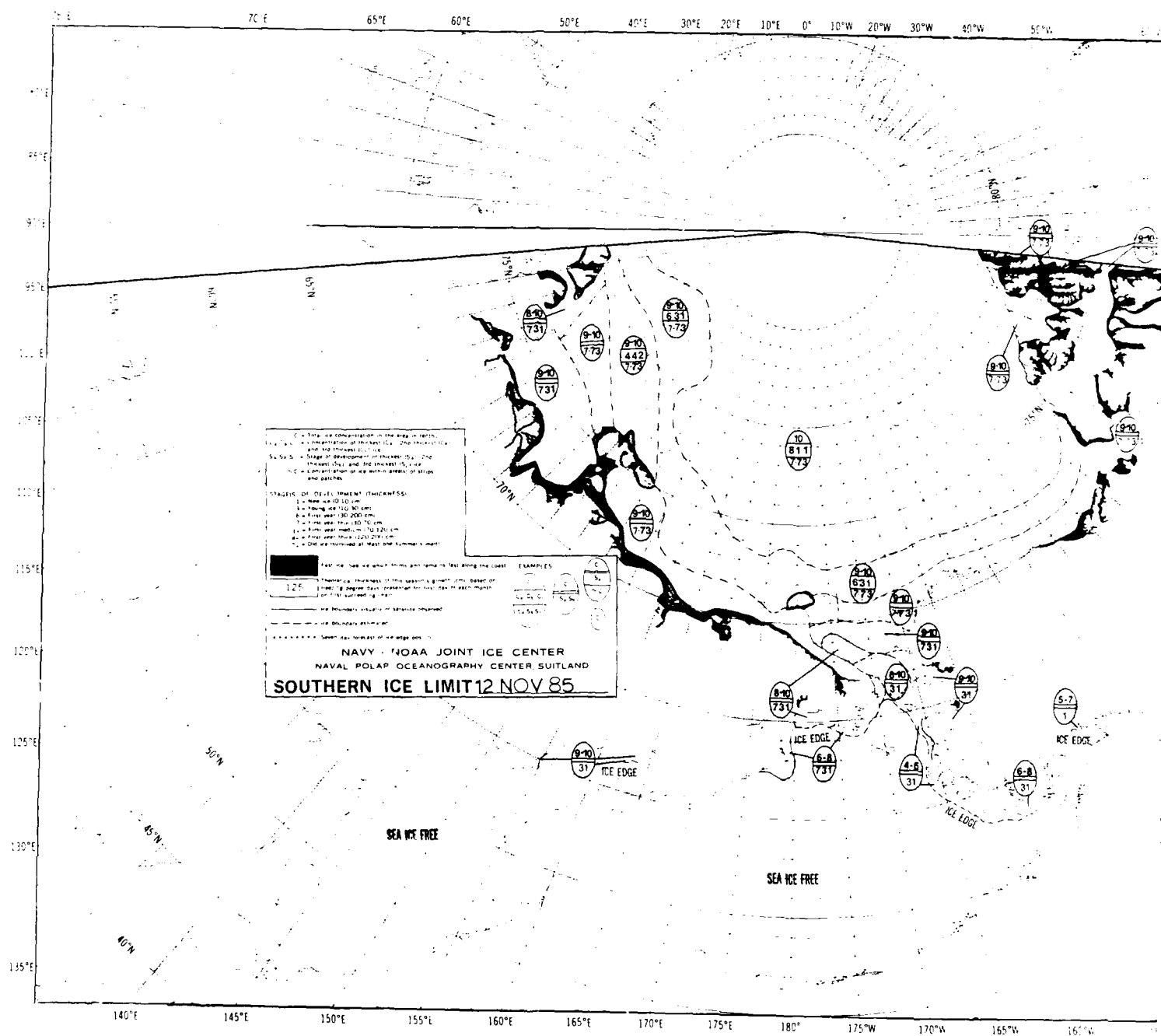


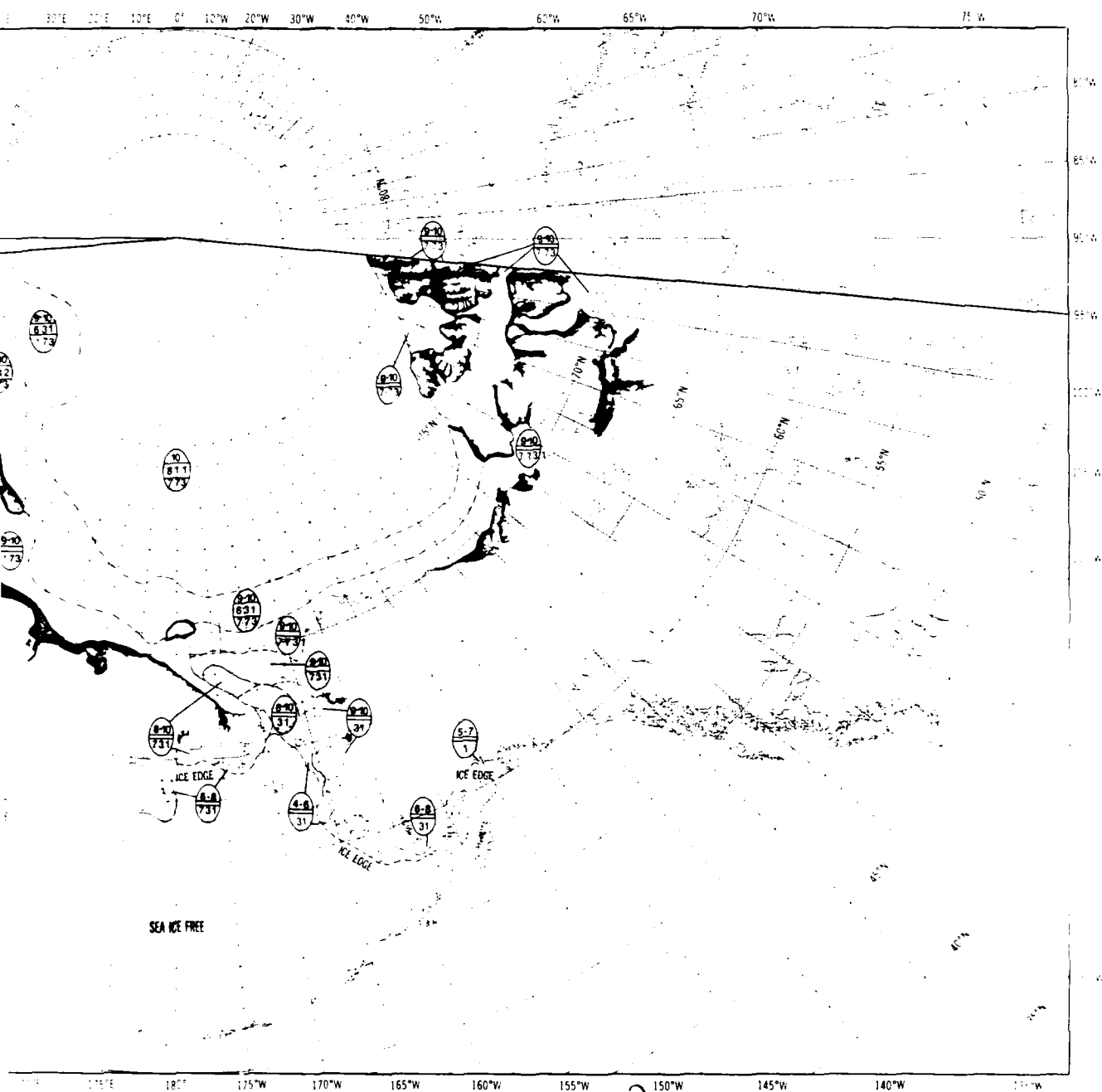




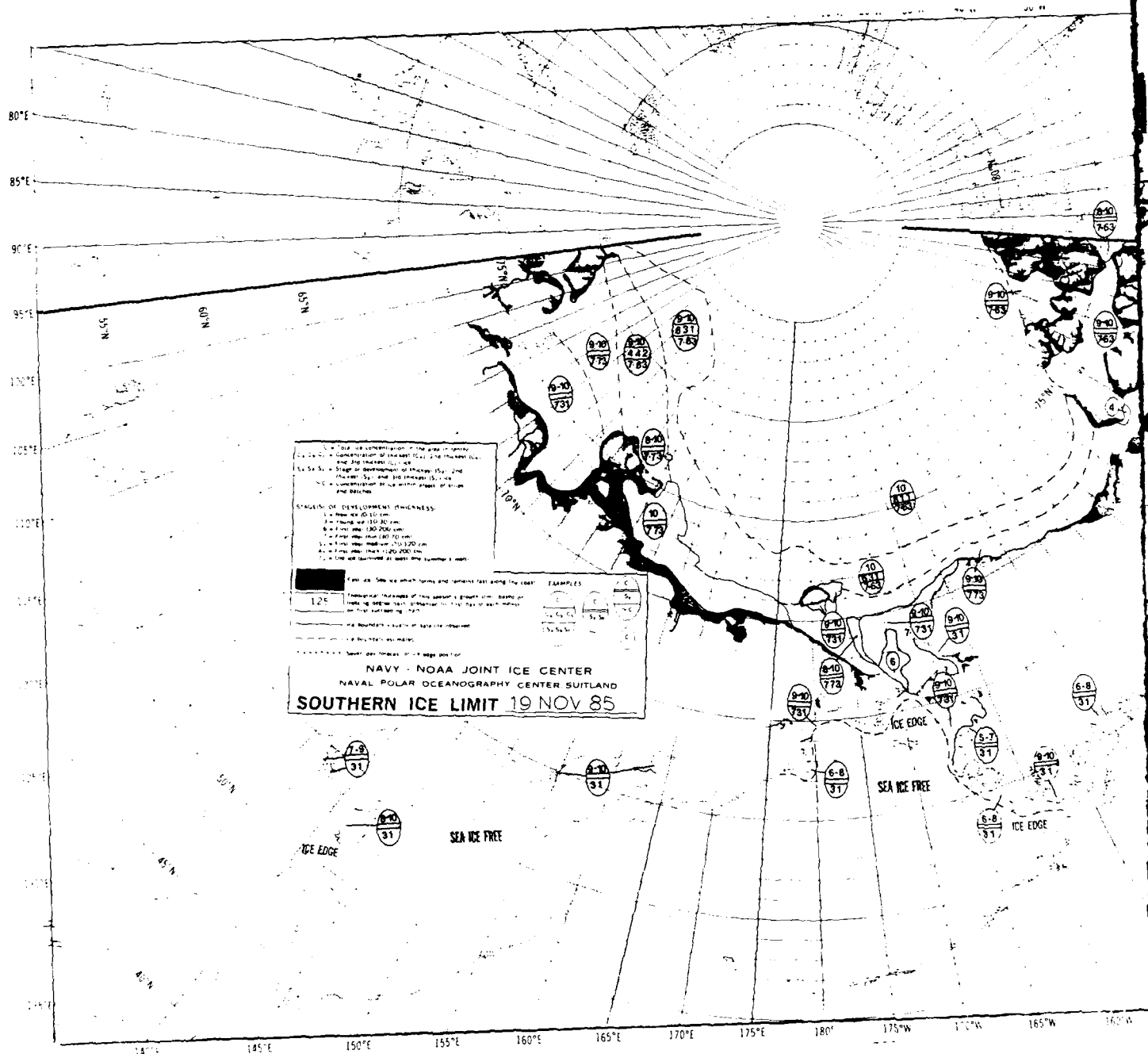


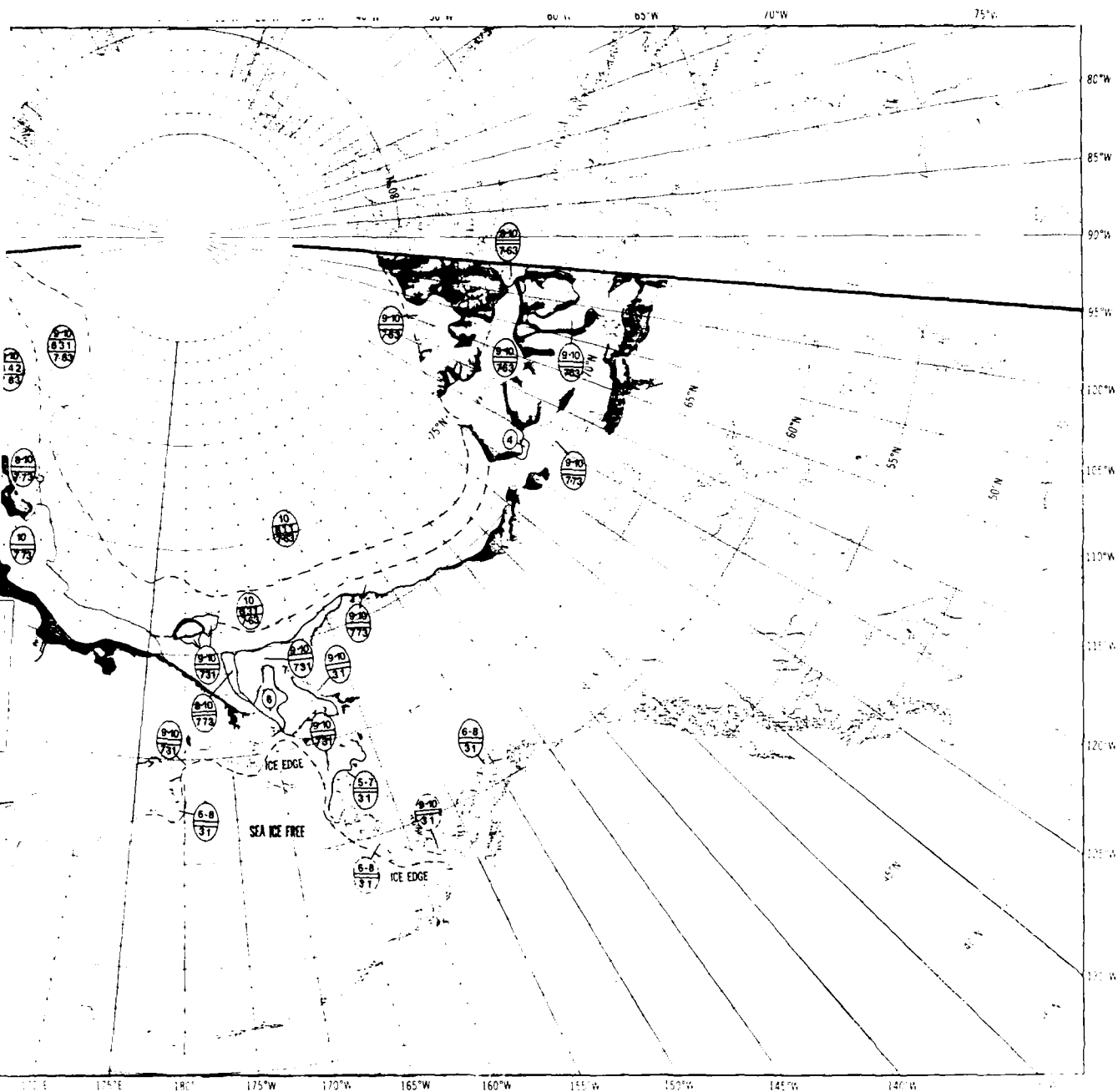


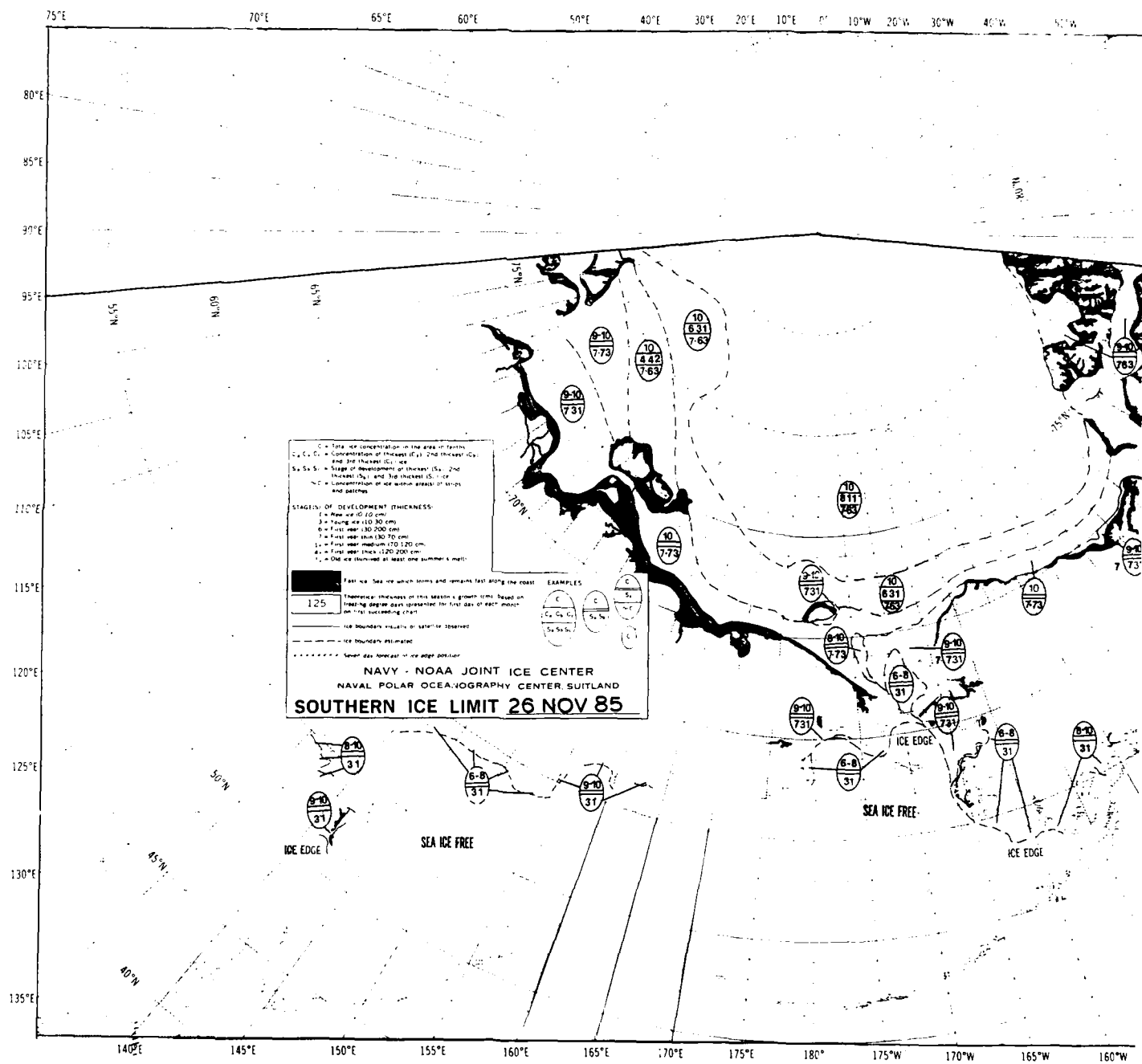


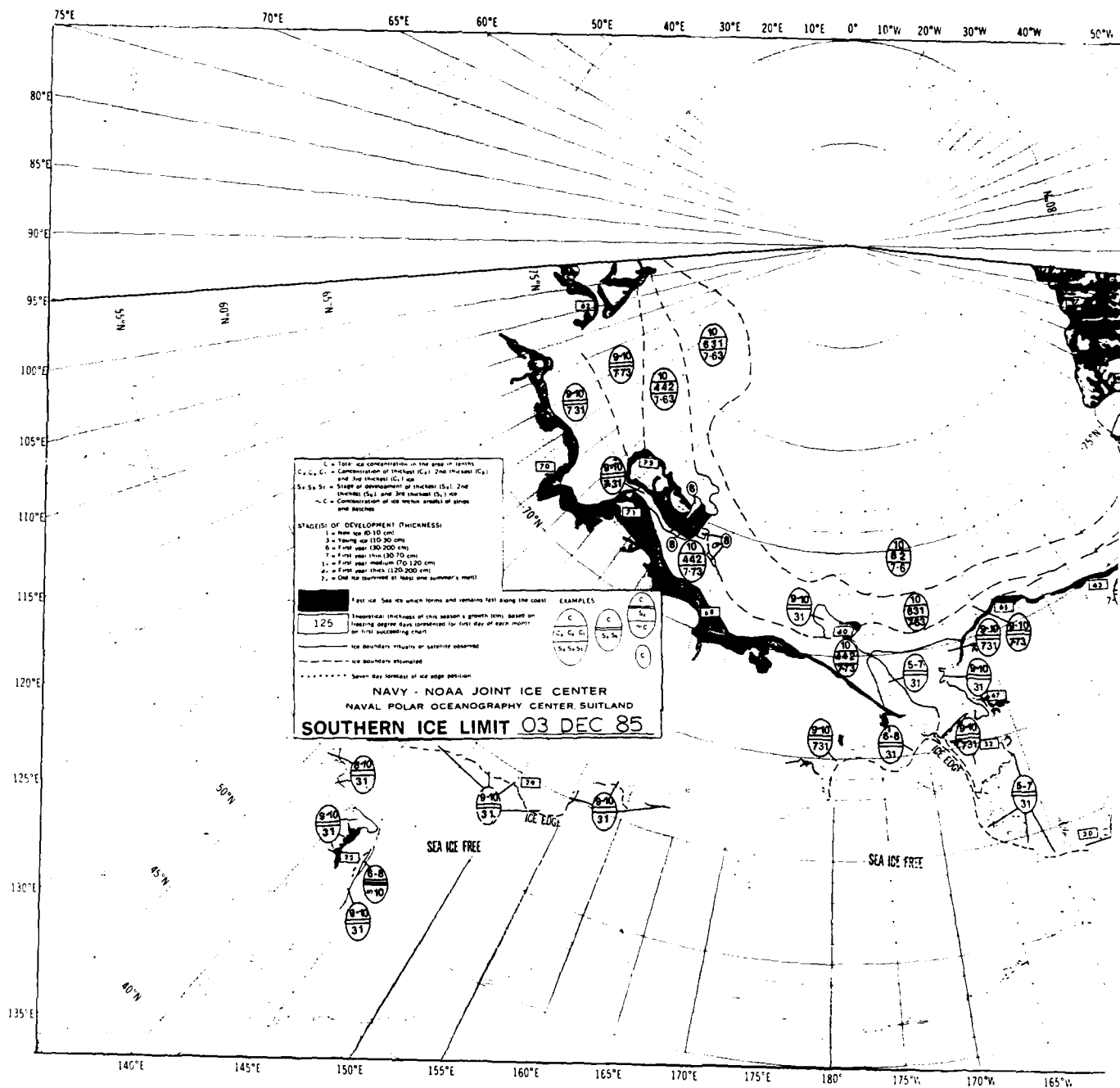


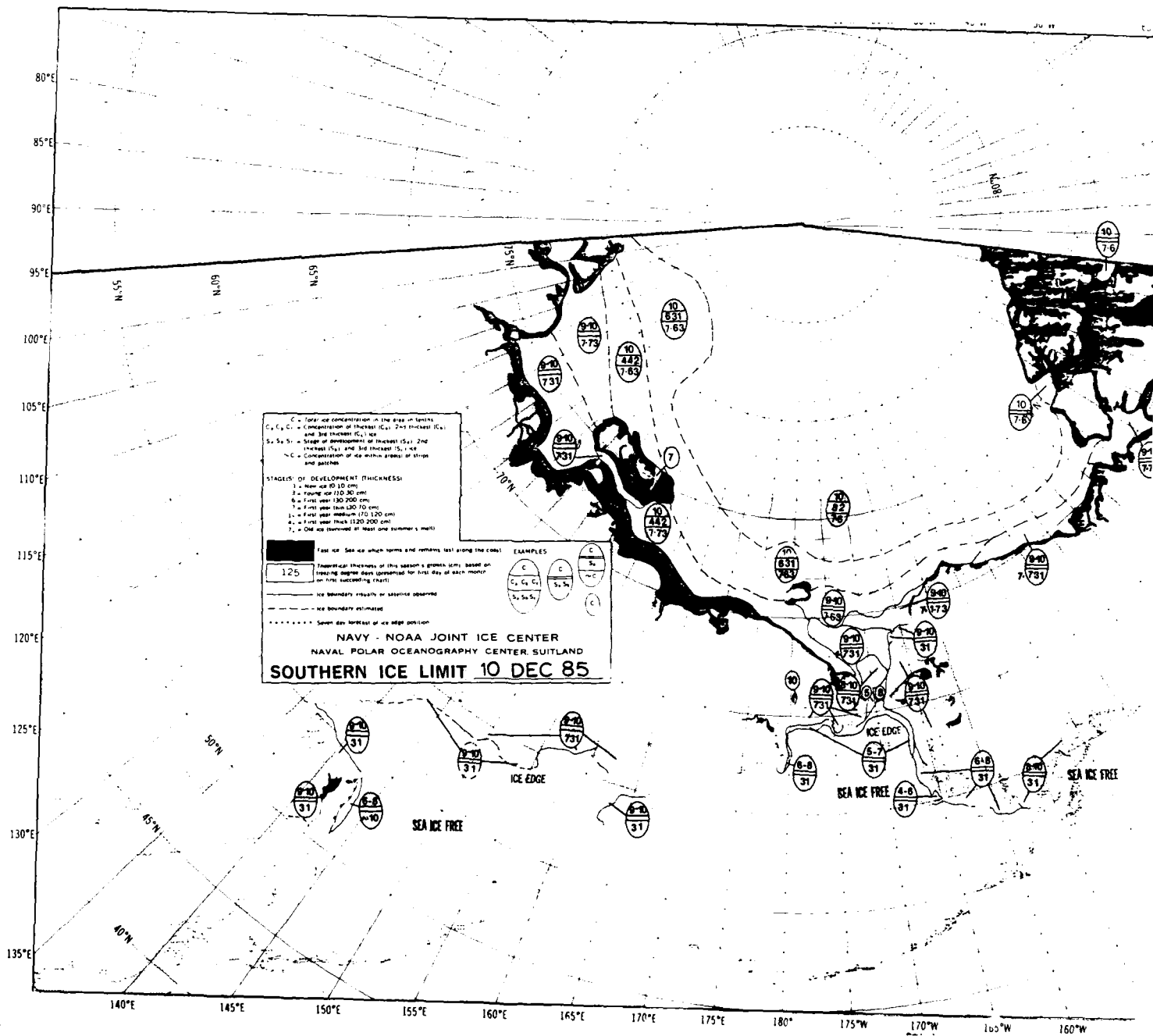
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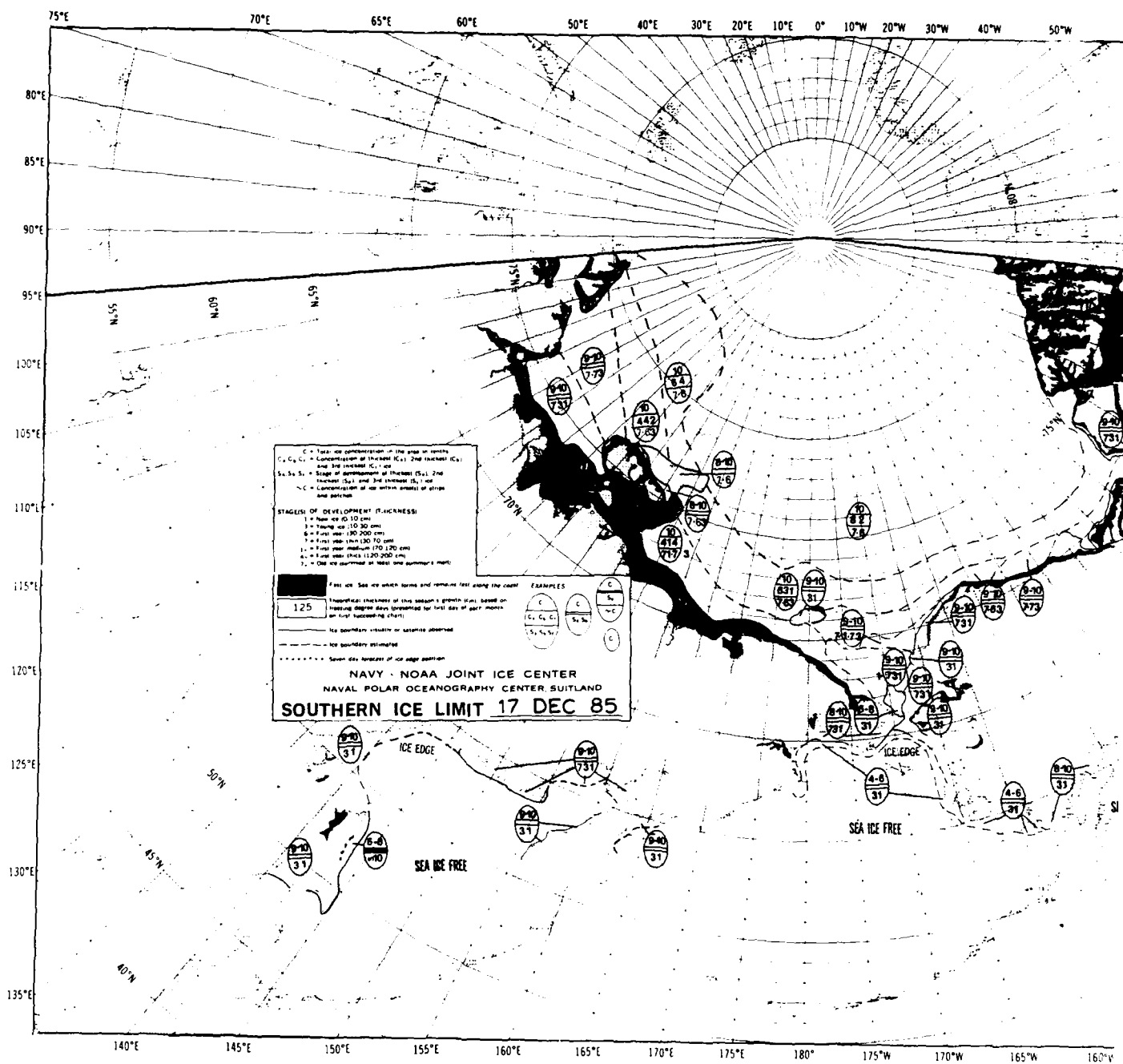


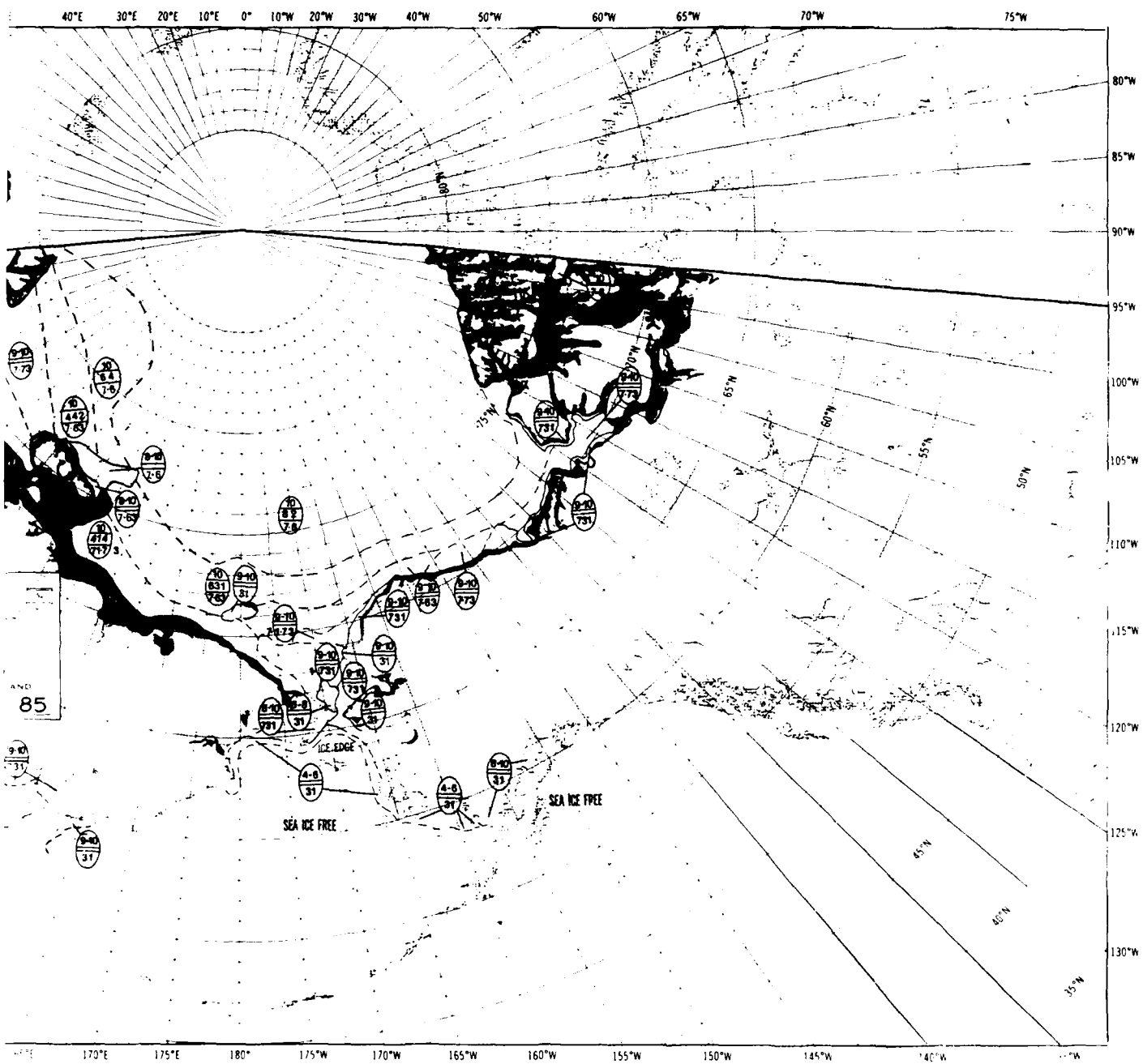


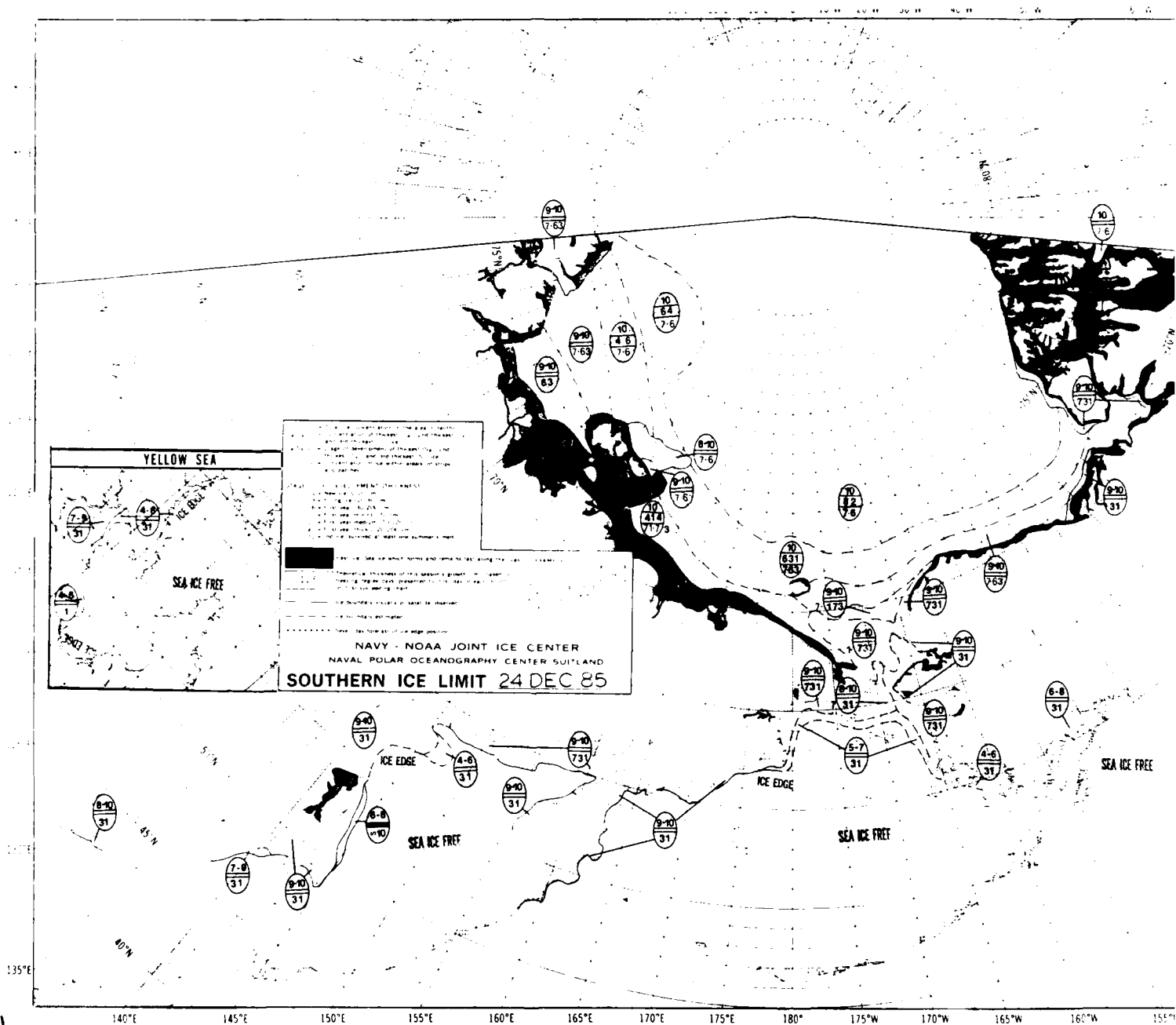


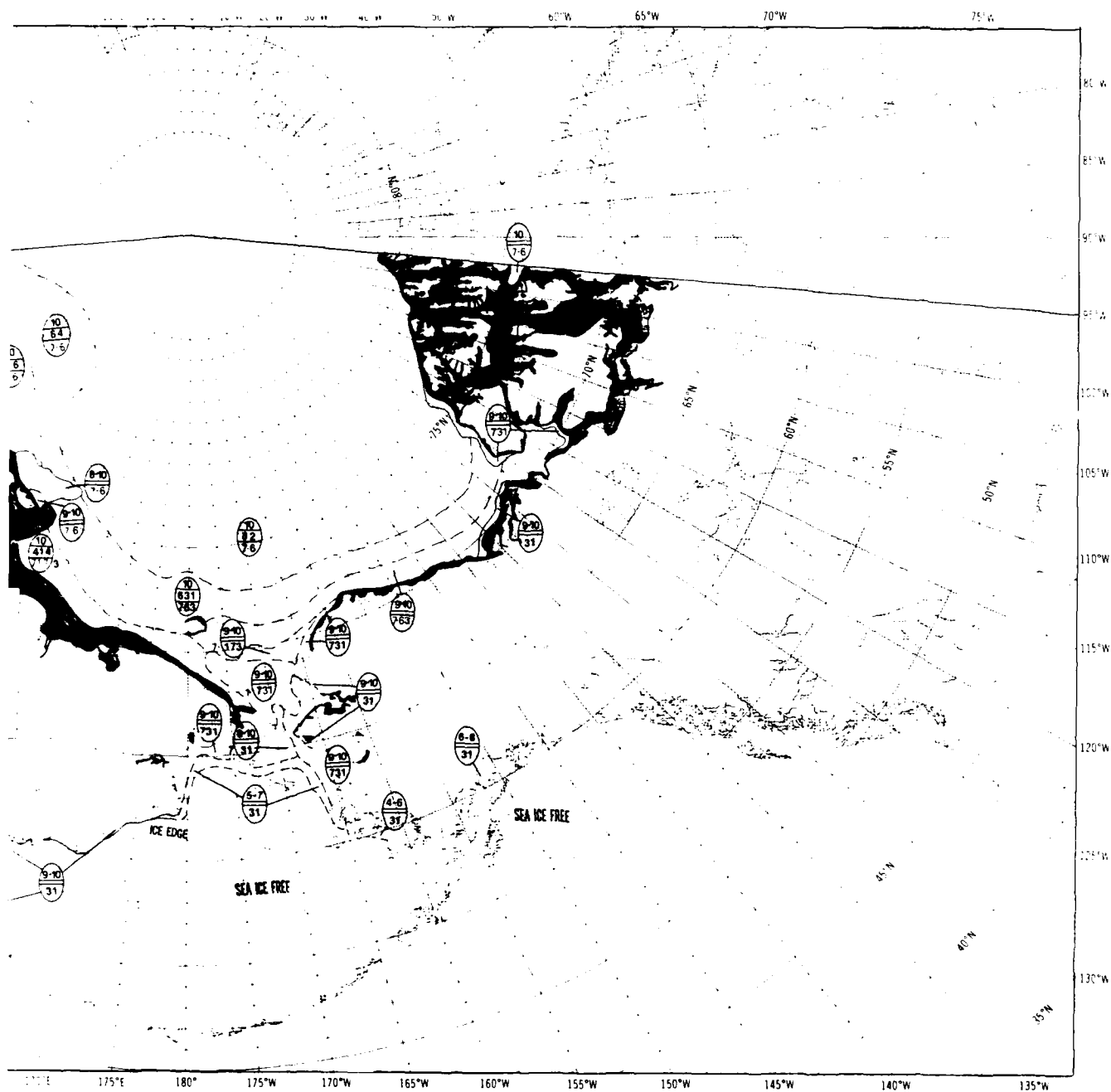


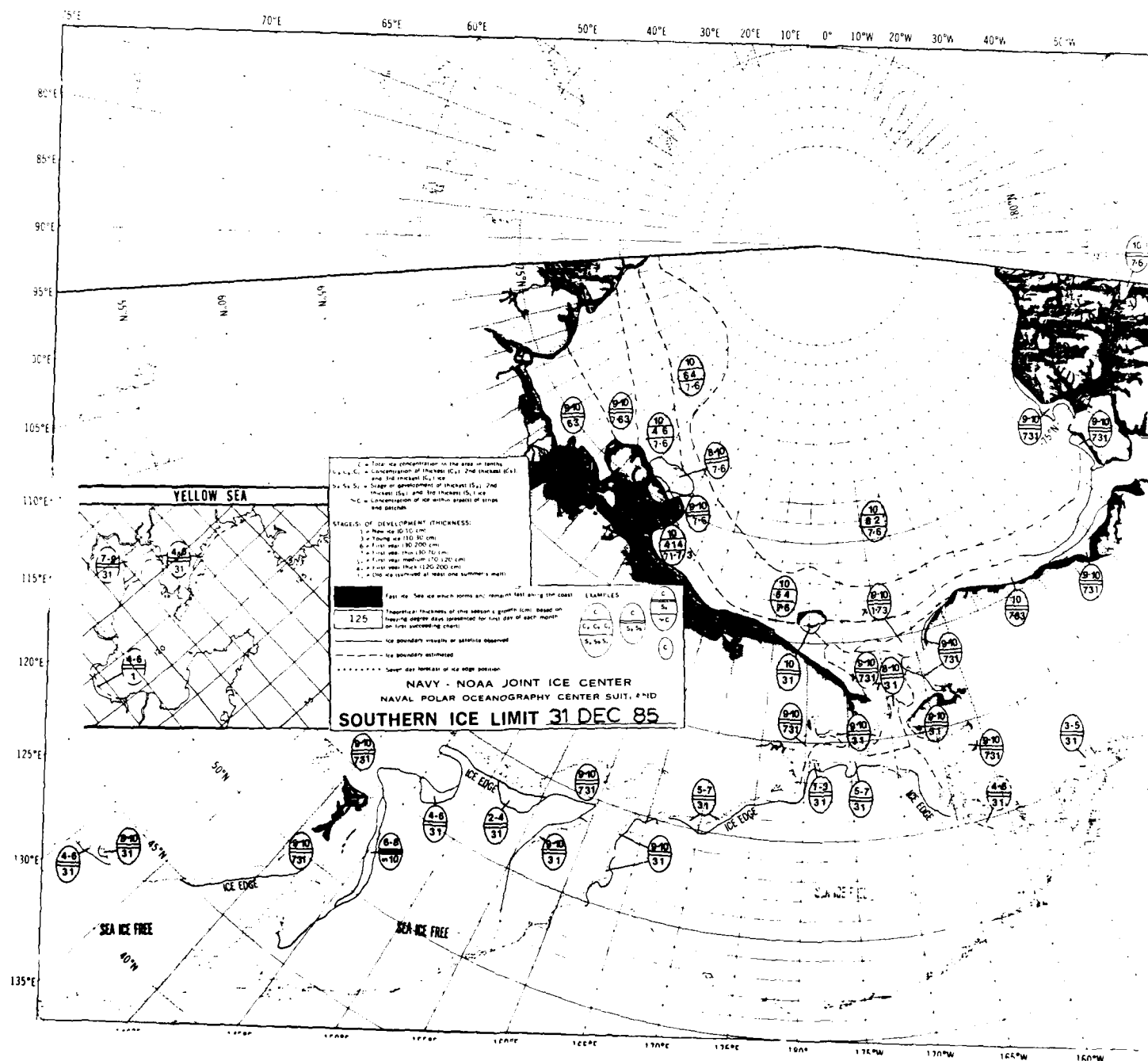


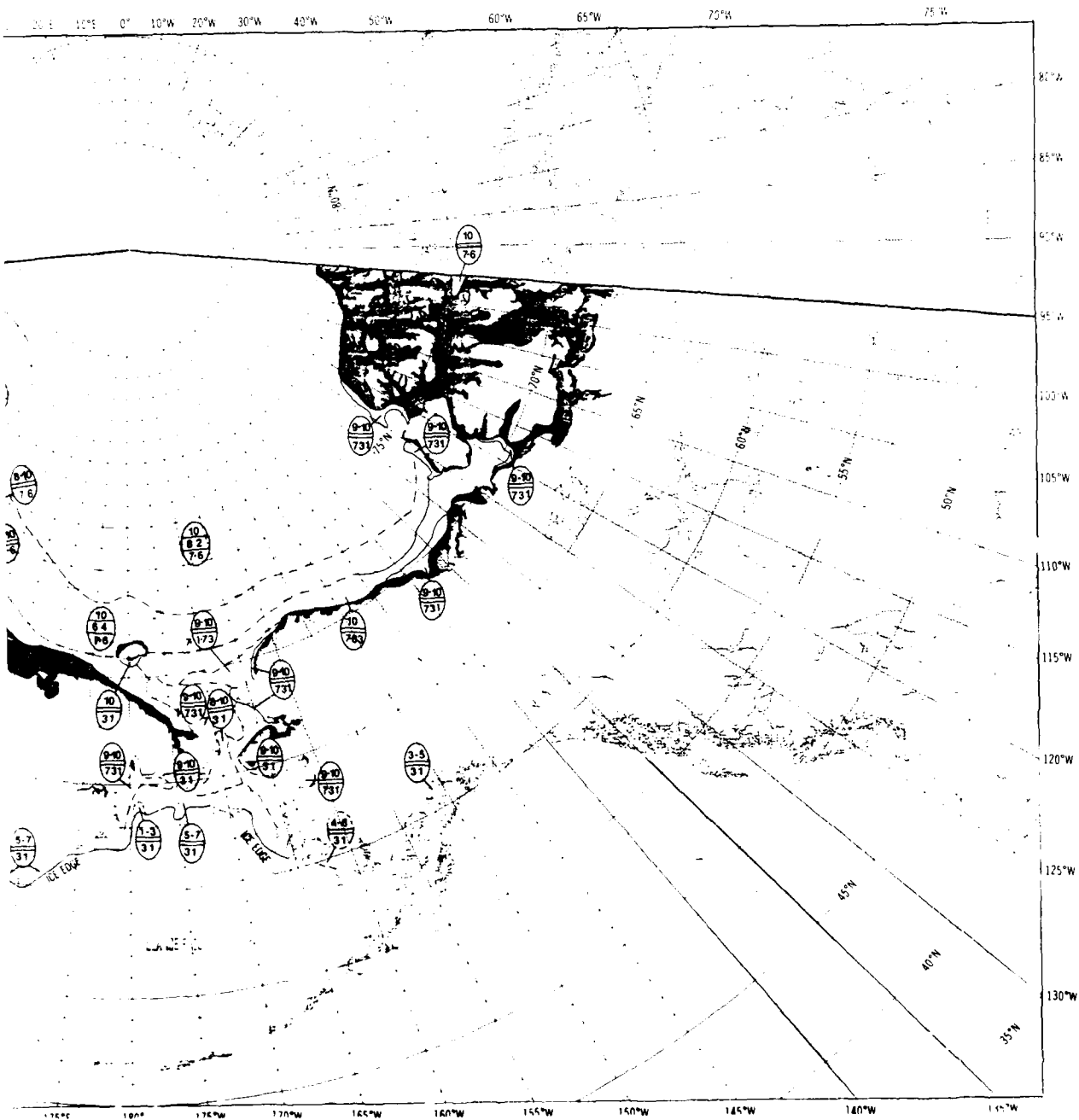












USCOMM-NOAA-ASHEVILLE, NC 9-86-175

TABLE I SATELLITE DATA UTILIZED DURING 1985

Time Period		Satellite Remote Sensing			Resolution	Coverage
From	To	Sensor Platform	Sensor Type	Spectral Region		
1-85 2-85 9-85	1-85 6-85 12-85	NOAA-6	AVHRR HRPT/LAC VIS NIR IR	0.58-0.68 um 0.73-1.10 um 10.5-11.5 um	1 km	Regional
			GAC VIS IR	0.58-0.68 um 10.5-11.5 um	4 km	Global
1-85	2-85	NOAA-7	AVHRR HRPT/LAC VIS NIR IR	0.58-0.68 um 0.73-1.10 um 10.5-11.3 um	1 km	Regional
			GAC VIS IR	0.58-0.68 um 10.5-11.3 um	4 km	Global
7-85	10-85	NOAA-8	AVHRR HRPT/LAC VIS NIR IR	0.58-0.68 um 0.73-1.10 um 10.5-11.5 um	1 km	Regional
			GAC VIS IR	0.58-0.68 um 10.5-11.5 um	4 km	Global
1-85	12-85	NOAA-9	AVHRR HRPT/LAC VIS NIR IR	0.58-0.68 um 0.73-1.10 um 10.5-11.5 um	1 km	Regional
			GAC VIS IR	0.58-0.68 um 10.5-11.5 um	4 km	Global
1-85	12-85	NIMBUS-7	SMMR	0.81 cm 1.66 cm	50 km	Global
1-85	12-85	DMSP-F (6)	VIS IR	0.4-1.1 um 10.2-12.8 um	3.7 km 4.4 km	Global
1-85	12-85	DMSP-F (7)	VIS IR	0.4-1.1 um 10.2-12.8 um	3.7 km 4.4 km	Global

Abbreviations and Acronyms

AVHRR - Advanced Very High Resolution Radiometer
 cm - Centimeter
 GAC - Global Area Coverage
 HRPT - High Resolution Picture Transmission
 IR - Infrared
 km - Kilometer
 LAC - Local Area Coverage
 NIR - Near Infrared
 SMMR - Scanning Multifrequency Microwave Radiometer
 VIS - Visible
 um - Micrometer

ATE
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